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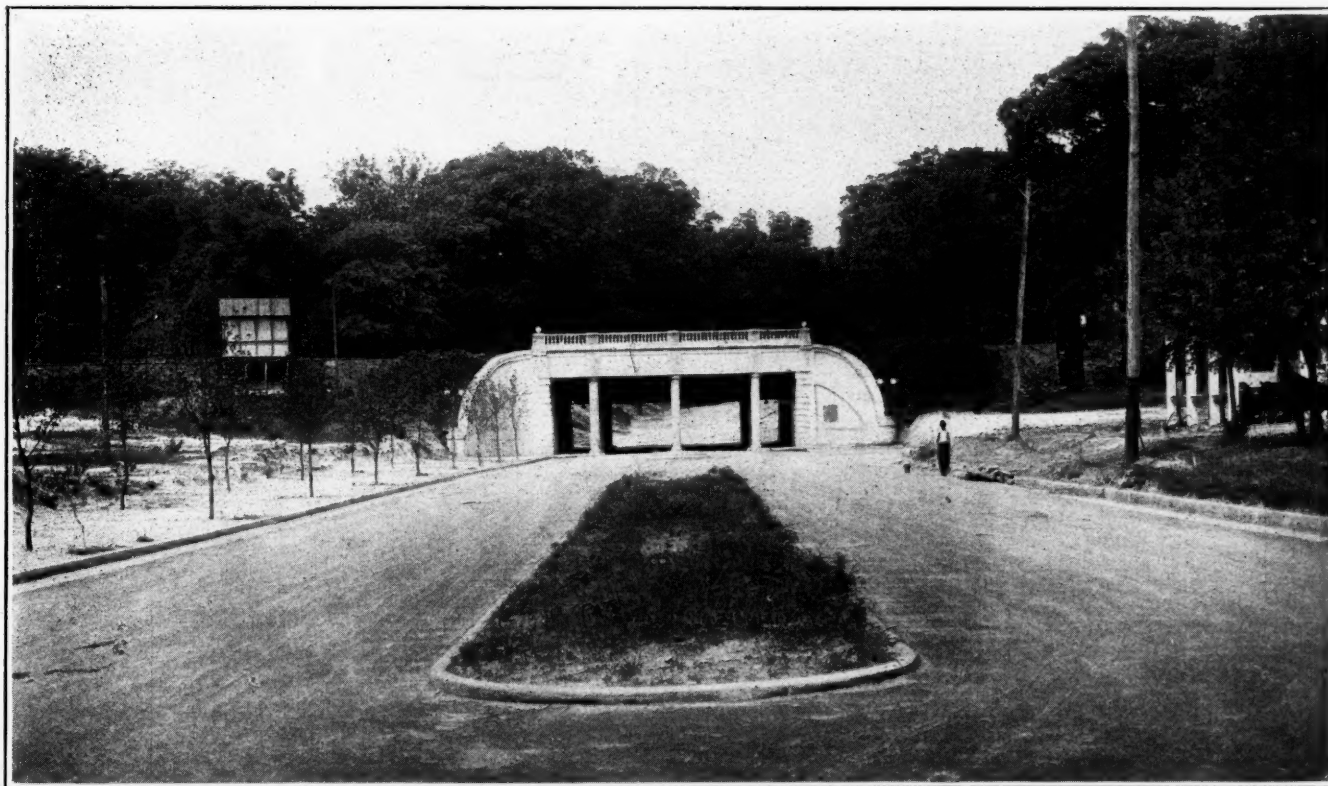


FIG. 1. PARKSIDE AVENUE, LOOKING TOWARD OVERHEAD CROSSING.

STREET PAVING IN TRENTON

Grading of Parkside Avenue to Improve View and Drain Swampy Land—Concrete Pavement for Alleys, with Brushed Top Surface and Creosoted Soft Wood Expansion Joints

By EDWARD F. CONNELLY

THE City of Trenton, N. J., has made wonderful progress during the past few years in the matter of street improvements and at the present time the various thoroughfares compare favorably with those of any city of its size in the country.

During the past year the city increased the mileage of its improved streets by more than four miles, and in addition repaved two prominent thoroughfares. About \$146,000 was spent in this work. In the early days of the city's history the streets were nearly all of the old dirt variety, with the exception of a few streets in the center of the city which were paved with cobble, more familiarly known in those days as "river stones." Macadam was first used to replace some of the dirt streets, and then came vitrified brick and paving block.

The ordinance for laying the first pavement in the city was passed by the Council on August 25, 1866, and called for the paving of Front street between Green (now North Broad) and Montgomery streets, with cobble or river stones. June 27, 1871, Council passed an ordinance which called for the paving of Greene street from State to Hanover (one block) with a Nicholson wood pavement. The wood blocks were sawed at a local mill. The process of constructing the pavement was as follows: The street was first excavated and inch planks laid down, which in turn were covered with a thin layer of sand upon which the blocks were laid. After they were in place a preparation of tar was poured over the whole to fill the space between the blocks. Many of the blocks were sap wood instead of being from the heart of the trees and soon



FIG. 2—SAME AS FIG. 1, DURING CONSTRUCTION.

rotted, although the heart wood held good. This made the pavement full of ruts and ridges and no more of this pavement was laid.

In 1872 Broad street from Market to Taylor (now Greenwood avenue) was paved with Belgian block. Telford macadam made its appearance in 1876, when Council passed an ordinance for the paving of Clinton avenue from State street to the old stone bridge in East Trenton. On October 10, 1894, an ordinance was passed for the repaving of West State street with vitrified brick. About 1885 asphalt was first introduced here in the form of asphalt blocks. All these streets have now been repaved with sheet asphalt. Vitrified brick made its first appearance on Jackson street from Greenwood avenue to Market street under ordinance of May 29, 1891. Sheet asphalt was introduced in 1896, when Council passed an ordinance on July 22 for the paving of Hamilton avenue from Clinton to Chambers street. To-day most of the streets are covered with asphalt or the various bituminous mixtures such as bitulithic, filbertine, warrenite and amiesite. Nearly two million of dollars has been expended by the city in bringing its streets to their present condition.

IMPROVEMENT OF PARKSIDE AVENUE

The principal improvement work done during 1911 was the changing of the grade of Parkside avenue, whereby there is made possible a full view from State street of the approach to Cadwalader Park and the tunnel and incidently this section of the city is greatly beautified. The low lands adjacent to Lover's Lane (seen on left in Fig. 1) were purchased by the city for \$19,000 at the suggestion of City Engineer Abram Swan, Jr., to whom the city is indebted for the conception and planning of this beautiful entrance to its most popular park. Engineer Swan saw that, with the existing grade of Parkside avenue, the then proposed tunnel would be half hidden from the view of a person walking along State street, but that by the city's purchase of the tract and the changing of the grade, the tract would be several feet higher than the street and, instead of continuing as a swamp, could be perfectly drained and terraced by having the water flow into the



FIG. 3—RIVER END OF PARKSIDE AVENUE BEFORE IMPROVEMENT.

large drain which extends from the avenue to the river.

In the center of the avenue are grass plots protected by granite coping, which will contain flowers and shrubbery. At each intersection there will be placed in the near future a concrete post supporting an arc light. Concrete gutters have been laid and the avenue at the river materially widened. At this point it is proposed to construct a rustic foot bridge over the water power canal, connecting the avenue with the proposed river drive. The plans also called for the paving of the avenue with filbertine, and early in the year a contract for this was awarded to the Newton Paving and Construction Company at a cost of \$1.67 per square yard. Generally the cost of laying first-class asphalt in Trenton has been \$1.90 to \$2 per square yard.

NEW STYLE PAVING

Another improvement, important in that a style of paving new to this city was used, was the paving of two alleys with concrete as a monolith six inches thick. This pavement was recommended by City Engineer Swan after a thorough investigation of its possibilities and its successful use in other cities, especially Memphis, Tenn. Property owners have been doubtful about its durability and hesitated about petitioning for the laying of such a pavement, but the paving of the two alleys has proven its

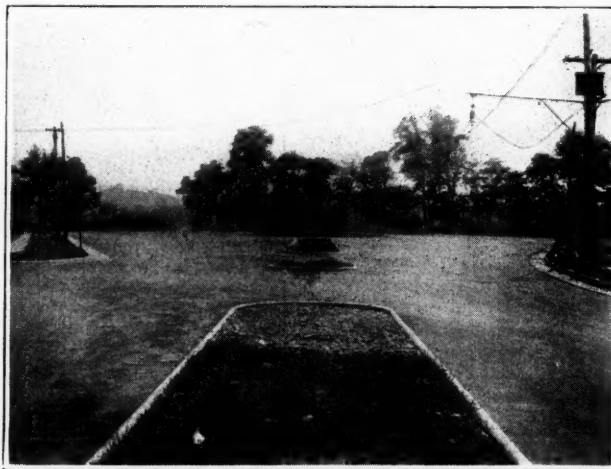


FIG. 4—SAME AS FIG. 3, AFTER IMPROVEMENT.

worth and a number of petitions have recently been received by the city engineer for its construction, while the Bureau of Engineering has about decided to recommend this style of pavement for all alley improvements.

Its practicability on streets where the traffic is very heavy has not been proven in this city as yet, but there seems to be no reason why it will not wear as well as some of the materials now being laid. The price per square yard at the present time for laying this pavement is \$1.44, but there is no doubt but that the price can be reduced after the contractors become familiar with the work.

The specifications for the paving of one of these alleys (Ward alley, from Front street northerly and westerly to Stanton street) with monolith concrete call for one part Portland cement (requirements of the standard specifications for Portland cement of the American Society for Testing Materials) and three parts Ottawa sand. The concrete is to be mixed in the proportion, by measure, of one part cement, $2\frac{1}{2}$ parts sand and 5 parts broken stone. In proportioning materials, one barrel of Portland cement is to be held to contain 4 cubic feet, and one standard bag of cement (four bags to the barrel) as one cubic foot, and the quantity of sand and stone to be used will be determined accordingly.

The sand is to be uniformly graded, the particles ranging from one-quarter inch to that which will pass a number 100

standard sieve; is to be free from loam, mica or other detrimental impurities, and be of silicious, granitic or igneous origin.

The stone shall be broken in approximately cubical shapes ranging in size from one-quarter inch up, the largest particles not to exceed in any dimension half the thickness of the concrete in place. Broken stone must be equal in quality and durability to the best trap rock or limestone.

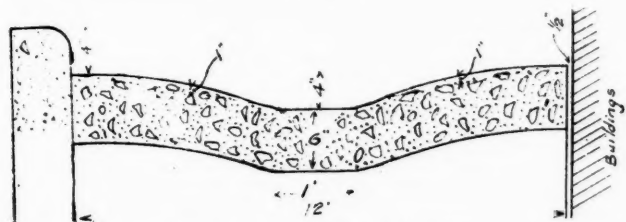
These materials are to be mixed wet enough to produce a concrete of a consistency that will flush readily under light tamping, but which can be handled without causing a separation of the coarse aggregate from the mortar.

Retempering, that is, remixing with additional water, mortar or concrete that has partially hardened, will not be permitted.

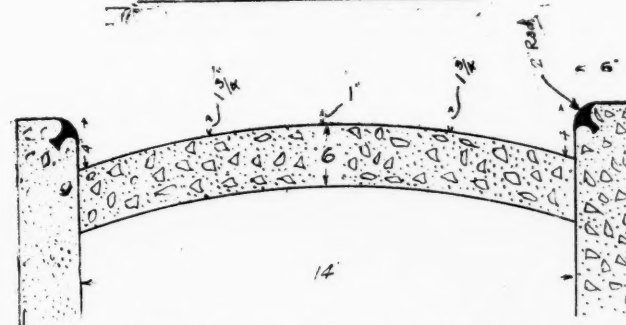
The concrete shall be deposited in a layer on the sub-grade in such quantities that, after being thoroughly rammed in place, it will be of the required thickness, and the upper surface shall be true and uniform.

In conveying the concrete from the place of mixing to the place of deposit, the operation must be conducted in such a manner that no mortar will be lost, and the concrete must be so handled that it will be of uniform composition throughout, showing no excess nor lack of mortar in any place.

The thickness of the pavement shall be six inches, with its upper surface on the finished grade.



DETAIL OF DISH SECTION



DETAIL OF CROWN SECTION

SECTIONS OF CONCRETE PAVEMENTS IN ALLEYS.

The pavement shall be finished by thorough hand tamping, preferably with a tamper having pyramidal extensions on its working surface, tamping to continue until the mortar flushes readily to the surface. The mortar shall then be immediately brushed with a broom such as is ordinarily used for sweeping street pavements by hand to slightly roughen the surface.

The application of dryer will be prohibited.

EXPANSION JOINTS

Expansion joints shall be placed at right angles to the curb line at intervals of 50 feet and shall be placed parallel with the curb lines where directed.

The joints shall be one inch wide and shall be filled with creosoted soft wood timber with the grain vertical and extending the full depth of the pavement.

During the first four days after placing, the pavement shall be kept moist and it shall be protected against traffic until the concrete has thoroughly set. In no event shall the pavement be used within ten days after being laid.

No concrete shall be mixed while the air temperature is below 32 degrees F., and if this temperature is reached at any time before the pavement has thoroughly set, the same shall be immediately provided with such covering as will protect it from all damage.

In the call for bids, prices were asked per square yard for monolith pavement, including the furnishing of all materials required for the work, price per lineal foot for concrete curb both straight and circle, furnishing and setting heading stones, and constructing vitrified drain pipe and inlets.

STREET DEPARTMENT

The work of improving the streets is under the direction of City Commissioner J. Ridgway Fell, City Engineer

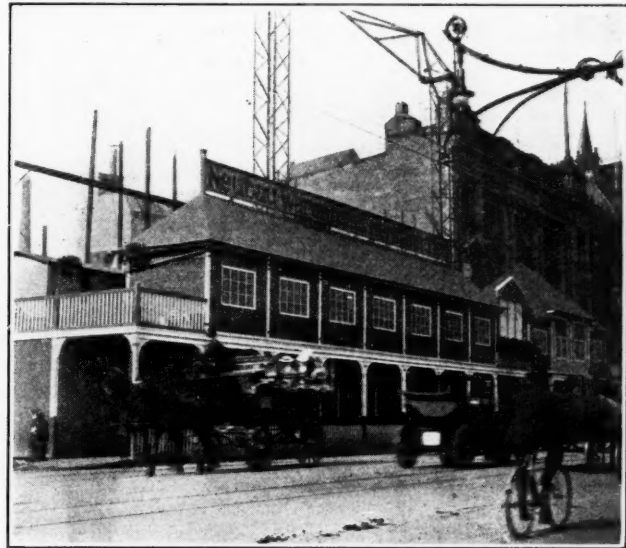
Abram Swan, Jr., and Engineer of Streets Harry F. Harris. The salaries aggregate \$22,220 per year upon a winter organization of the department, but the usual summer work will increase this somewhat. Bids are asked for the construction of all work and the contract awarded to the lowest bidder.

City Engineer Abram Swan, Jr., to whom the City Commission has now given entire charge of the street repair work, is seriously considering the purchase of an asphalt repair plant, which could be moved easily from street to street wherever repair work was necessary and thus save the city a large expense.

CONCEALING BUILDING OPERATIONS

It is but a few years since certain American cities took great pride in the smokiness of their atmospheres, looking upon it as a symbol, visible to all, of the extensiveness of the manufacturing industries which constituted their greatness. Now they are endeavoring to enforce smoke ordinances, realizing that outsiders do not take such delight in this tangible evidence of their industrial greatness.

In a similar way our young cities seem to be so proud of the amount of building which is going on in connection with their growth, because it furnishes a proof of it, that they call attention to it by compelling both pedestrians



TEMPORARY FALSE FRONT TO CONCEAL BUILDING OPERATIONS AND KEEP APPEARANCE OF STREET ATTRACTIVE.

and vehicles to climb over or digress around piles of dirt or building materials which sprawl over the sidewalks and roadways. Perhaps they will some time realize that cities in the growing are no more handsome than colts in the same stage.

German cities appear to realize this. The illustration shows how the construction of a large building is not even allowed to temporarily disfigure a street, while the obstruction is reduced to a minimum; but a "false front" is erected to prevent the display of an unsightly gap in the perspective of building fronts.

SANITARY SECTION OF THE A. P. H. A.

THE American Public Health Association at its Milwaukee meeting, some months ago, appointed a committee to consider the matter of forming a Sanitary Engineering Section, and at the Havana meeting such a section was authorized. A meeting will be held at noon, January 19, in the rooms of the American Society of Civil Engineers, New York City, to formally organize such a section. All who are interested in sanitary engineering and the engineering attributes of public health work are invited to attend.

SEWAGE TREATMENT AT PRAGUE

Screens, Grit Chambers, Sedimentation Tanks, Chemical Precipitation—Sludge Disposal Methods—Results on River Water of Purification

Abstract translation of description prepared by Chief Engineer of Sewers Maslo for the Dresden-Prague Congress of the Association Generale des Hygienistes et Techniciens Municipaux.

PRAGUE, the capital of Bohemia, is located on the Maldau river, not far from its junction with the Elbe. The Maldau at this point makes a sharp bend around a spur of the mountain on the left bank, while the right bank is flat and is largely formed of alluvial deposits. The greater part of the city is built upon the flat basin thus formed. It has been the practice of the city since the tenth century to discharge house sewage as well as storm water into this river. Many years ago this began to produce objectionable conditions, these being increased by the existence of four dams which greatly reduced the velocity of the stream and favored the deposit and putrefaction of organic sediment. The old sewers were very primitive in construction, the walls permeable and the invert often nearly level, the result being a contamination of ground and underground water and the air above. The objection to the pollution of the river reached a climax when the city decided to obtain a drinking water supply from it by sinking wells in its bed, with the belief that the sand in which the wells were sunk would filter out the impurities, which was found not to be the case. About 1880 there was considerable agitation of the subject of sewerage, some favoring the Liernur system, which was then popular. In response to an invitation by the community plans were submitted in competition, but none were accepted. They brought to notice, however, the difficulties of the sewerage of the city, because of the flat grades which were necessitated by the topography. This difficulty was increased by the existence just below the city of a narrow rocky gorge in the channel of the river which caused the waters to set back over the low lands above in time of flood. Realizing the difficulty and importance of the problem, the city established a bureau for investigating the subject, which ran levels over all the streets, determined the depth of the ground water level, the location of the old sewers, the elevation of the river at different points and at different stages, etc.

In 1885 two plans were presented to the common council, one by Engineer Kaftan, who had been the chief sanitary adviser of the city, the other by the chief of the investigating bureau, Mr. Vaclavek in collaboration with Mr. Ryvola. These plans were submitted to Sir W. Lindley, of Frankfort-on-the-Main, who did not feel satisfied to recommend either one, and who was asked to prepare a plan, which he did and which was approved in 1893. In 1897 the government established a sewerage district by which there should be included in the general plan four villages and numerous small communities, the area of this district containing 19,540 acres. This territory is divided for sewerage purposes into two sections, the first and larger occupying the west and middle part of the sewerage district and being drained with three interceptors known respectively as A, B and C, and containing 13,071 acres. The other sub-division is situated in the northeastern part of the district and on the right bank of the Maldau. Unfortunately the government, in establishing the sewer district, did not appreciate the connection which numerous other communities had with the sewerage project, and the city of Prague is now obliged to make special arrangements with various outside communities for receiving and disposing of their sewage. In 1896 Sir W. Lindley had charge of the carrying out of this plan, and occupied that position until 1909. The chief of the bureau of sewers is Mr. Heinmann.

The combined system is employed and follows English precedents. The material used in the larger sewers is hard burned brick laid in cement mortar with the joints carefully pointed. For the smaller sewers glazed stoneware pipes are used. The ordinary depth of the sewers was fixed at 16.4 feet. The masonry sewers are egg-shaped. The pipes of 13 to 16 inches diameter are enclosed in a layer of concrete. The grades are designed to make the sewers self cleansing; and to further insure this, each branch sewer is connected at its upper end with a conduit which carries flushing water which can be admitted to the individual sewers by gates.

The system is divided into two levels, the dividing line being the contour located 9.8 feet above high water mark, which permits the sewage from the upper level to discharge into the Maldau by gravity at all times. In order to secure the maximum grade obtainable, one of the interceptors, that known as A, takes a short cut to the purification plant by tunneling through the mountain spur which deflects the river. The surplus flood waters are discharged into the river during time of storm, weirs being employed which act automatically by the aid of dams, either by utilizing the inertia of the water or by the opening of flood gates. The purification plant is located on the left bank of the Maldau around the bend, and the three collectors, A, B and C, of the larger zone meet at this point. This plant is designed to treat a dry weather flow of 196 gallons per second, the anticipated maximum amount which will be contributed by 1,300,000 population several years hence. Provision is made for a rain water flow of three times the dry weather flow. This gives a flow of 47,556,000 gallons a day (one-half flowing off in 8 hours) in dry weather and 142,670,000 gallons in rainy weather. As the flow of the river is about 15,852 gallons per second, or 1,321,000,000 gallons per day, it is apparent that this does not offer satisfactory dilution to crude sewage. However, the government consented to mechanical purification, with the understanding that in times of epidemics of intestinal diseases and during low water chemical precipitation with the use of milk of lime and alum should follow the mechanical clarification.

The plant provides for three steps: First, the removal of floating matter; second, removal of heavy matter, and third, completion of the purification. The intercepting sewers discharge into a grit chamber 115 feet long, 39.4 feet wide at the water level and 18 feet mean depth. The velocity of flow through this is .28 feet a second. Before the water enters the grit chamber floating matters are removed from it by a grating, the matters collecting on this being removed by workmen and shoved through an iron gutter to an elevator. The bottom of the grit chamber is shaped like a trough. The sludge which collects there is raised by a centrifugal pump and discharged into two basins in order to separate the grit from the lighter suspended matter. In the grit chamber are the suction of two centrifugal pumps designed to raise the discharge of intercepting sewer B during high water, this being the low-level sewer. At such times intercepting sewers A and C are bypassed around the grit chamber and discharge through two outlets into the river.

From the grit chamber there are two channels leading to the sedimentation tanks, which channels pass through a room supplied with two mixing appliances for adding the chemicals when they are required as described above. From here the sewage passes to the distributing gallery, where it is directed to the desired sedimentation tanks by gates. As these tanks are filled five times a day their combined capacity is 9,511,200 gallons, or one-fifth of the amount clarified daily. The plans provide for 30 tanks, each of 317,040 gallons capacity, to be constructed in three groups of ten each, only one of which groups has yet been constructed, which is capable of treating 15,852,-

000 gallons a day. Each individual tank is 287 feet long, about 18 feet wide and has a mean depth of 8.9 feet. When delivering 24.6 gallons a second the velocity of flow is .236 of an inch. At the outlet of each of these are four rectangular orifices placed below the water surface. After operating for 6 to 8 days the tanks are emptied by opening the proper gates, the last few inches of water being removed by pumps to the other sedimentation tanks. The sludge is then pushed by workmen toward the upstream end of the tank, where there is a funnel shaped sludge pit, the tank bottom having a one per cent. slope toward this end. The final effluent is discharged into the river.

The arrangement of the appliances is as follows: At the right of the grit chamber is a water wheel which utilizes the fall of the sewage in interceptor A for obtaining power for use about the plant. Just beyond this are the chemical house, the centrifugal pumps for draining the sedimentation basins, plunger pumps for lifting the sludge, and a pump for supplying non-potable water for flushing. On the left of the grit chamber are two steam engines and two centrifugal pumps for raising the sewage from collector B during high water. Beyond all of these lie the group of sedimentation tanks.

The sludge question at Prague has been solved in a manner which, while not perfect, is at least satisfactory for the present. Three alternative methods are employed: First, the sludge is discharged into two pits situated just east of the grit chamber, where it loses 20 per cent. of its volume; second, during the winter it is discharged into two special basins having an area of 8.5 acres, the bottom of which is furnished with drains, where it is composted with dirt and dried. These basins are located on an island formed by the river and a navigation canal, on which island the municipality has purchased 48.5 acres of additional land in order to utilize this dried sludge as manure; third, the sludge in summer is discharged into sludge scows in the river and carried by them to a sandy district near the Elbe, where there are basins, some provided by the city and some by private individuals, having a capacity of 21,000 cubic yards, which will hold dried sludge having an original volume of 42,000 cubic yards. (We suppose that this also is used as fertilizer.)

At the present time this plant is purifying the sewage from a population of 310,000 inhabitants, the daily discharge averaging 11,890,000 gallons. During 1910 the sedimentation tanks received 130 cubic yards of sludge a day, which was reduced to 100 cubic yards in the sludge pits. The quantity removed from the grit chamber was about 20 cubic yards, and from the gratings 4 cubic yards, which figures correspond to .01 cubic foot of sludge per capita per day. The construction of the plant cost about \$475,200, of which \$365,400 was for the plant itself and \$109,800 for the land. The cost of operation, including interest and sinking fund charges, was \$56,231 in 1909, or \$1.07 per million gallons treated, or 15 cents per capita per year.

Care was also taken with the sewer connections, Sir W. Lindley having suggested to the chief magistrate a set of ordinances concerning these which were taken from English and American practice. All properties connected with the sewers must have their plumbing plans approved by proper officials, which have direct charge of the construction up to the building. The property owner pays for construction in the house and under the sidewalk, the city for that between the sidewalk and the sewer.

The house connections are to be made as small as possible, the more common diameter being 6 inches.

The materials employed must be smooth and water and gas tight. Inside the building and to a short distance outside iron is used, and from here to the sewer glazed

stoneware pipes. The maximum diameter of soil pipe permitted is 4 inches.

Abundant ventilation is required, the soil pipe being carried above the roof and no main or running trap being permitted.

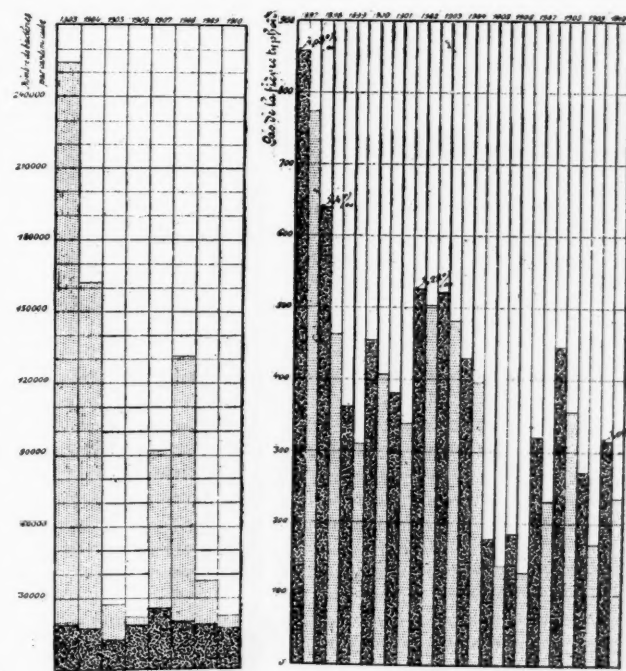
Ample flushing of the soil pipe is required and all pipes from fixtures must be provided with traps.

At first it was difficult to obtain plumbers who were able to follow out these regulations, but the sewer department has gradually improved this condition.

As the capacity of the new sewers has by no means been reached the comparatively small flow causes more or less deposits, especially as the velocity in the flatter sewers is not sufficient for preventing or removing all sediment. To remove these deposits workmen in groups of four, six and ten push this sediment before them by the use of scrapers.

A part of the cost of sewerage the city is met by a tax of 6.25 cents per square yard on all floors used for dwellings, workshops, stables, etc.

The effect of the sewerage upon the health of the city has been noticeable. The city is provided with a double water supply, that used for all other than drinking purposes being taken from the river. Statistics carefully drawn up by Mr. Prochazka, chief municipal physician, show that typhoid fever at Prague can very seldom be traced to the drinking water, but has generally been caused by the drinking of the non-potable supply. This is indicated by the fact that, as the outlets of the old sewers into the river are abolished and new sewers are substituted, there is a reduction in the number of cases. Bacteriological analyses of the river water also show the improvement of the river. Two diagrams are presented, one showing the typhoid death rate from 1897 to 1910, the other showing the numbers of bacteria per c. c. in river water above the city and within the city limits. The greatest reduction in the number of outlets into the river occurred in the years 1904 and 1905, and a corresponding reduction in the number of bacteria in the river below the outlets is shown by the diagrams. (No explanation is given for the increase in 1907 and 1908, an increase which was accompanied by a corresponding increase in typhoid cases.) In the left hand diagram the heavy shading represents the number of bacteria per c. c. in samples collected just above the city; the light shading, the number in samples collected below the sewer outlets. The dia-



BACTERIA IN THE MOLDAU.

CASES OF TYPHOID FEVER.

gram covers the years 1903 to 1910 inclusive. The right hand diagram represents the number of cases of typhoid fever between the years 1897 and 1910 inclusive, there being shown for each year the cases in the city and its suburbs, indicated by heavy shading, and the number of cases in the city alone, represented by light shading.

TEMPERATURE OF PAVEMENTS

Test Upon the Absorption and Radiation of Heat by Sheet Asphalt, Asphalt Block, Wood Block, Brick and Granite Block Pavements

By HOWARD C. HOTTEL, City Chemist of Trenton, N. J.

DURING the summer the writer, working jointly with J. S. Miller, Jr., made a somewhat novel experiment upon various kinds of pavements, in order to obtain the relative value of each in regard to the absorption and radiation of heat.

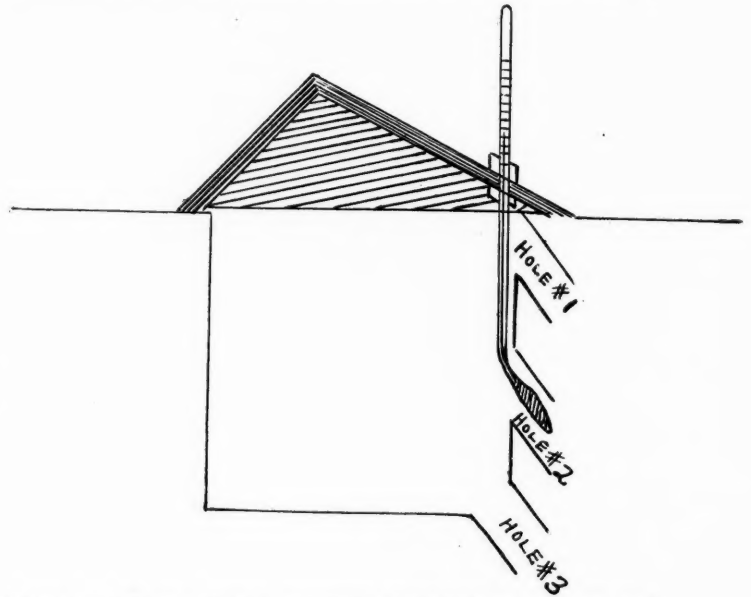
The pavements upon which the test was made included sheet asphalt, asphalt block, creosoted wood block, Metropolitan paving brick, Mack brick and granite block. The experiment was carried out in a yard where the nature of the soil was principally sand and dirt. After having blocked off the strip of ground with boards, it was then excavated, a concrete foundation laid and the various pavements constructed. A small section of each pavement, about three feet square, was laid upon the concrete foundation. One section of the pavement made an even joint with the next section and so on, making the entire experimental strip of six pavements about six yards in length and one yard in width.

An opening was made in each pavement, for which purpose a block or brick was removed, thus exposing a small space down to the concrete. Holes were then bored in the block or pavement so exposed, extending 1 inch, 2 inches and 3 inches below the surface. This opening in the pavement was covered with a roof of $\frac{1}{4}$ -inch fiber board, through which thermometers with bent bulbs were inserted and held in place by corks. The top hole was designated as No. 1, the middle hole as No. 2 and the bottom hole as No. 3.

The experiment was begun at 12 o'clock noon and was

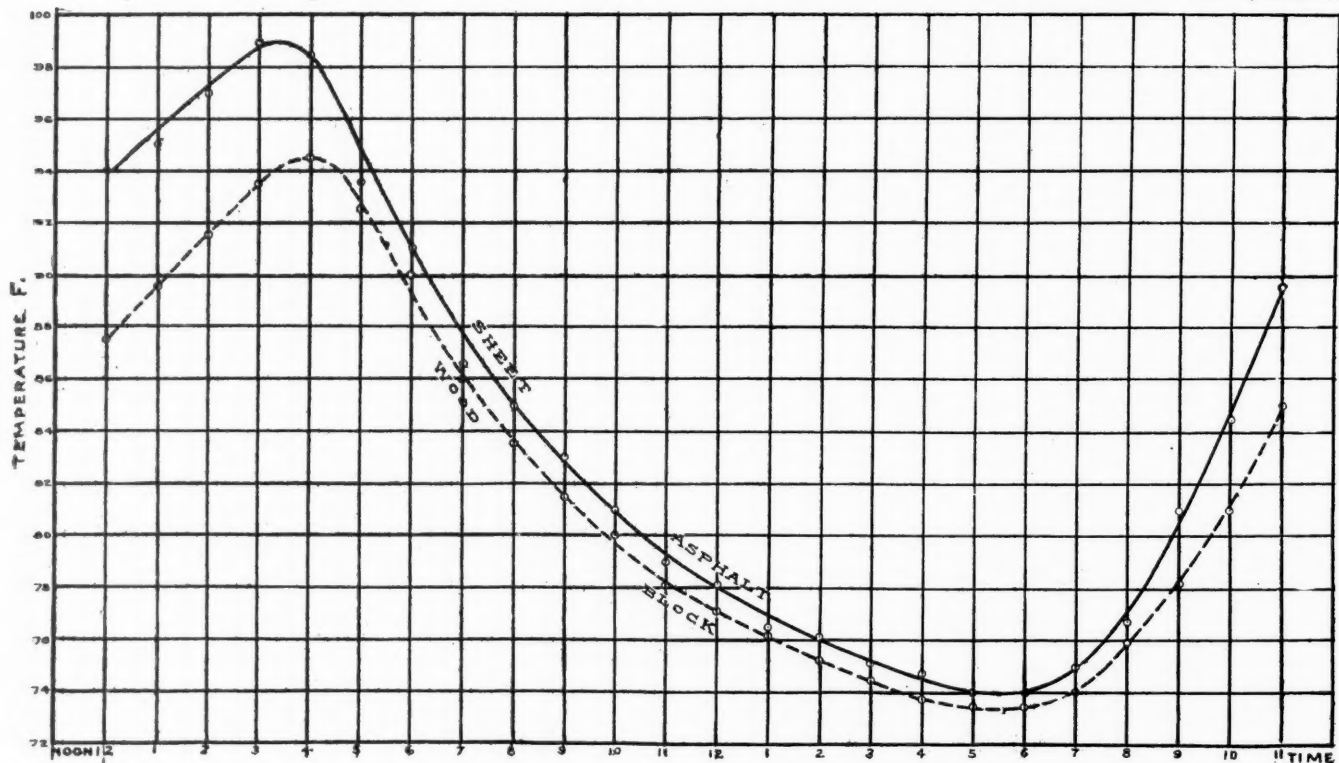
completed at 12 o'clock noon the following day. Before beginning the same, the openings in the pavements were uncovered and the holes partly exposed to the sun until about 11 a. m. The holes were then filled with mercury, thermometers inserted in top holes No. 1, covers adjusted, and the readings begun at noon.

After the reading of the thermometer for hole No. 1 had been taken, it was placed in hole No. 2, this reading recorded, and then placed in hole No. 3; after this reading



CROSS SECTION OF OPENING, SHOWING THERMOMETER IN HOLE NO. 1.

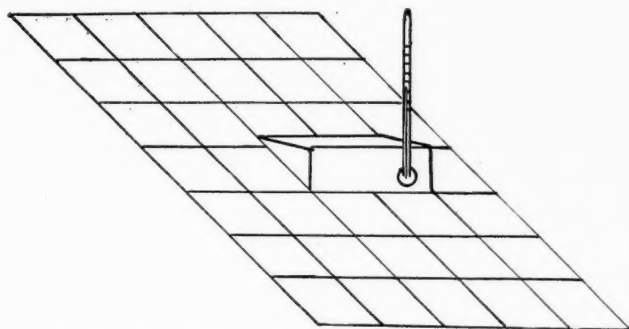
had been taken the thermometer was allowed to remain in hole No. 3. Six thermometers of special pattern with the bulb bent were used, one for each pavement, and the readings for all six of the pavements were taken the same way as has been described. At 1 o'clock the readings were again taken, the only difference being that the initial reading was begun in the bottom hole, No. 3. On the even hours the initial reading was taken in hole No. 1, nearest the surface, and on the odd hours in hole No. 3, nearest



CURVES COMPARING TEMPERATURES OF HOLE NO. 1 FOR SHEET ASPHALT AND WOOD BLOCK PAVEMENTS DURING 24-HOUR TEST.

the foundation. In this way the readings alternated and were taken each hour for the full 24 hours.

In making this test one of the hottest days in July was picked out, and it required an all night vigil. It kept the two of us who were performing the experiment busy for at least 15 to 20 minutes out of each hour. Thermometers had to be changed and 36 readings made hourly. At the start it took us fully 30 minutes to complete the work, but after becoming familiar with it and dividing it up equally, we found it possible to make all of the readings in about 15 minutes.



COVER OVER OPENING, WITH THERMOMETER IN POSITION.

The thermometers placed in the holes in the pavements required 18 readings, three for each pavement, top, middle and bottom holes. In addition to these we used a resistance thermometer, which required two readings for the top of each pavement, making a total of 12 for the six pavements; a maximum and minimum thermometer, a shielded thermometer and a wet and dry bulb thermometer, together with a record of the degrees of humidity. The shielded thermometer was placed upon a nearby building, directly in the sun, so that there would be recorded an accurate record of the normal air temperature. During the night the readings were taken with the aid of a lantern and a movable electric light.

The results that were obtained were both interesting and surprising. The highest temperature recorded by the shielded thermometer was 98 deg. F., at 1 p. m. of the day on which the experiment was started, and the lowest 70.5 at 4 a. m. the following morning.

The asphalt pavement was found to be the most susceptible to a rise in temperature, and the others rose in temperature in the following order: Asphalt block, Mack brick, granite block, Metropolitan brick and wood block, showing the last to be affected more slowly by heat than any one of the other pavements.

The surface of the granite block was found to cool off more quickly than any of the others, and while the wood block did not apparently absorb the heat as readily as the other pavements, it also showed that its heat was retained for a longer time than was the case with the Metropolitan, Mack and granite blocks.

The sky was hazy when the experiment was started and there was a slight breeze from the northwest. The lowest humidity was recorded at 1 p. m., showing 43.5 degrees, and the highest at 2 a. m., 100 degrees.

The maximum and minimum thermometer showed a maximum of 127 and a minimum of 66.

Curves have been made showing the variations in temperature of the different pavements, and the accompanying table gives the highest and lowest temperature of each hole of the various pavements and the time at which it was taken.

Sheet Asphalt—

| | Highest temperature. | Time. | Lowest temperature. | Time. |
|-----------------|----------------------|---------|---------------------|---------|
| Hole No. 1..... | 99 F. | 3 p. m. | 74 | 5 a. m. |
| Hole No. 2..... | 94.5 | 3 p. m. | 74.75 | 5 a. m. |
| Hole No. 3..... | 91 | 4 p. m. | 75.25 | 6 a. m. |

| | Highest temperature. | Time | Lowest temperature. | Time. |
|----------------------------|----------------------|---------|---------------------|---------|
| Asphalt Block— | | | | |
| Hole No. 1..... | 97 | 3 p. m. | 73.25 | 5 a. m. |
| Hole No. 2..... | 94.5 | 3 p. m. | 74.25 | 5 a. m. |
| Hole No. 3..... | 90 | 3 p. m. | 75.25 | 5 a. m. |
| Wood Block— | | | | |
| Hole No. 1..... | 94.5 | 4 p. m. | 73.5 | 6 a. m. |
| Hole No. 2..... | 89 | 4 p. m. | 74.25 | 6 a. m. |
| Hole No. 3..... | 85.5 | 4 p. m. | 75.25 | 6 a. m. |
| Metropolitan Brick— | | | | |
| Hole No. 1..... | 95 | 4 p. m. | 73.25 | 6 a. m. |
| Hole No. 2..... | 92 | 4 p. m. | 73.75 | 6 a. m. |
| Hole No. 3..... | 89.5 | 3 p. m. | 74.75 | 6 a. m. |
| Mack Brick— | | | | |
| Hole No. 1..... | 96.5 | 3 p. m. | 72.5 | 5 a. m. |
| Hole No. 2..... | 92.5 | 2 p. m. | 73.25 | 5 a. m. |
| Hole No. 3..... | 91.5 | 2 p. m. | 74.75 | 6 a. m. |
| Granite Block— | | | | |
| Hole No. 1..... | 96 | 3 p. m. | 72 | 6 a. m. |
| Hole No. 2..... | 94.5 | 3 p. m. | 72 | 6 a. m. |
| Hole No. 3..... | 92 | 3 p. m. | 72.25 | 6 a. m. |

IMHOFF TANK RESULTS

(Concluded from page 5 of the issue of January 4.)

The sludge is generally left in the tanks from two to four months, and some times even six months. Occasionally after long intervals the outlet pipe is found clogged with the compacted sludge, which is loosened up by injecting a little water from the outlet pipe under pressure. When the sludge flow has once begun it continues freely until shut off. The sludge is run onto drying beds to a depth of 8 or 10 inches. On these the water content is reduced about 40 per cent. On the average, six or seven days is required for this drying, although two or three are sufficient in summer time, while in winter frost interferes with the action, in consequence of which the tanks are not emptied in winter, if this is possible. The amount of wet sludge withdrawn at Essen and Bochum in 1909 amounted to 6.7 and 3.4 cubic yards, respectively, per square yard of drying bed area.

It was estimated that about one-third of the organic matter in the fresh sludge is given off in the form of gas during decomposition in the tank, about 25 per cent. of this gas being carbonic acid gas and 75 per cent. marsh gas, with traces of hydrogen and nitrogen. The almost complete absence of sulphuretted hydrogen may, it is suggested, be due to the fact that sulphuretted hydrogen is produced by the decomposition of dissolved and colloidal matters, and these matters do not putrefy in the Imhoff tank, but only the "removed" solids. Experiment with the Imhoff tank has shown that if the period of sedimentation be prolonged the liquid sewage becomes septic, giving conditions comparable to those existing in the septic tank, and sulphuretted hydrogen is formed.

The sludge removed from the beds is generally less than 10 per cent. of the original volume of wet sludge (95 per cent water) found in the crude sewage. Part of this is due to the disappearance of the organic matter as gas. A part of this gas remains in the sludge, owing to the pressure of the supernatant fluid, until the sludge is drawn off onto beds, when the gases gradually escape during drying. In escaping they leave voids behind them which give the sludge a porous structure and greatly facilitate the drying process. An analysis of the water draining from the drying beds shows that there is no objection to its flowing directly into a stream. The quantity is very small, and in small plants would probably all soak away into the ground.

In the three installations referred to herein the average cost of maintenance is said to be about \$2.50 per million gallons of sewage treated, or 7.6 cents per annum per capita, this including sludge disposal, supervision and all charges, including interest and sinking fund.

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CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address,
giving both old and new addresses.

Contributions suitable for this paper, either in the form of
special articles or of letters discussing municipal matters, are
invited and paid for.

Subscribers desiring information concerning municipal mat-
ters are requested to call upon MUNICIPAL JOURNAL, which
has unusual facilities for furnishing the same, and will do so
gladly and without cost.

JANUARY 11, 1912.

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Change of Address of Municipal Journal

THIS number of the MUNICIPAL JOURNAL will be the last
to be issued from the old address, 239 West 39th street.
Before the next issue appears we shall have moved to
new offices in the Germania Life Building, at the corner
of Fourth avenue and 17th street, at the northeast corner
of Union Square, the address being known as 50 Union
Square.

When we moved into our present quarters about four
years ago we believed that we were providing abundant
room for the growth of the paper for many years to
come, but the growth has been so great that we already
find ourselves cramped for room and are compelled to
obtain larger space than is available at our present ad-
dress. Our new quarters will, moreover, be more con-
venient for subscribers and friends of the paper who de-
sire to visit us, being only one-half block from the 18th
street subway station, while the Fourth avenue surface
cars pass the door and the Broadway cars are but a
short block away. These facilities will enable us to still
further improve MUNICIPAL JOURNAL—an aim which is
constantly before us.

Consumer Gas from Sewage

TWO or three years ago an article appeared in MUNI-
CIPAL JOURNAL in which the author presented scientific
reasons for the belief that it is possible to obtain from
sewage a gas which can be used to operate producer gas
engines. No special apparatus or device was considered
by him, but merely the possibility from a chemical and
physical point of view. It was already known that gas
was evolved in septic tanks which could theoretically be
used in this way, but the amount given off by these was
so small and especially so irregular that nothing further
than experiments on a small scale had ever been tried.

A number of cities are producing sludge from sewage
in greater or smaller quantities, and all are finding diffi-
culty in disposing of this. The most important advantage
claimed for the Emscher tank is that it produces a sludge
which is not offensive to either sight or smell and can be
easily handled. No matter what the system of sewage
treatment, there is a considerable amount of solid residue
which must be disposed of in some way, whether it be the
brown-paper-like deposit on a sand bed or the liquid
sediment in a settling tank. If it can be used for gen-
erating producer gas, this seems to be a most desirable
way of disposing of it, if the value of the power obtained
will so much as equal the operating and overhead costs of
the producer plant.

A few months ago we were shown the plans of elaborate
apparatus designed for handling pressed sewage sludge,
such as is turned out in large quantities by the disposal
plants of Worcester, Mass., and Providence, R. I. A
proposition was made to both of these cities for handling
their sludge, but we have been informed by the officials of
each of them within the past few weeks that the proposi-
tion has not yet been and is not likely to be accepted by
either of them.

The chief obstacle which appears to stand in the way
of success is the 70 to 75 per cent. of moisture which re-
mains even in pressed sludge cake, and which runs as high
as 90 or 95 per cent. in unpressed sludge. This means
that from each pound of solid matter in the sludge there
must be removed from 3 1-3 to 20 pounds of water as a
part of the process of manufacturing the gas, and only a
part of this pound of solid matter is gas-producing
material. There is hardly enough combustible matter in
sludge to drive off the contained moisture as steam, and
simple evaporation assisted by heat is too slow for dealing
with sludge by the ton. Drying by forced air currents,
centrifugal expulsion, etc., are employed in other branches
of manufacturing, but not for sludge in this country, so
far as we know.

While it has not yet been demonstrated that this amount
of moisture can be removed economically by existing
methods of drying, it does not seem impossible that future
developments in this, or the adaptation of present drying
methods as employed in other industries, will permit the
solving of the sludge problem along this line. But this
will probably involve mechanical presses, centrifugal
dryers or other machinery, the cost of operating which,
on a small scale, will make the process impracticable for
small plants. Fortunately the sludge problem is not so
pressing a one with them as with the large cities, both
because the quantities are small and also because the area
of available land is generally greater. Moreover, there
are in most cases more farm lands convenient to the small
city, where the sludge may be used as fertilizer, as de-
scribed on page 53 of this issue.

There are many similarities between sewage sludge and
garbage as to chemical composition, and methods of dis-
posal available; and it might be suggested that economy
would result from combining the treatment of the two in
one plant, where the products might consist of fat, fer-
tilizer and steam or producer gas power, or any com-
bination of these.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Paving Company Is Again Paving Streets

Knoxville, Tenn.—The Barber Asphalt Paving Co. has resumed work laying street paving under contract. The company is laying the asphalt on Central street and is as far north as Baxter avenue. The concrete crew is busy placing the concrete base on Eleanor street, which was delayed on account of it being filled ground. Upon completion of these two streets, the company will begin laying the sample paving, which is composed of macadam with asphalt binder, on State street and Clinch avenue around the Elks' Home. This last strip of paving will be laid without cost to the city.

Omaha Has 143 Miles of Paved Streets

Omaha, Neb.—City Engineer Craig has issued a statement of the various public improvements of the year 1911. The statement shows that there were 13.18 miles of pavement and repavement laid in 1911 as follows: Asphalt 4.8 miles; brick block, 5.3 miles; concrete, .3 mile; creosoted wood block, .4 mile; laid by the park board, macadam, 2.08 miles. The macadam was tarbound and laid at a depth of seven inches, the mixture being a gallon and one-half of tar and one-half gallon of oil to the square yard of surface. In addition the park board covered 80,000 square yards of dirt surface with oil.

The cost of the 225,911.9 square yards of pavement and repavement laid under the direction of the City Engineer's office during the year was approximately \$517,575.51.

The following is a complete tabulation of the various kinds of pavement existing at present:

| | Streets. | Alleys. | Totals. |
|---------------------|----------|---------|---------|
| Asphalt | 56.789 | .023 | 56.812 |
| Brick block..... | 50.142 | .431 | 50.573 |
| Concrete | .846 | 1.279 | 2.125 |
| Creosoted w. b..... | .400 | | .400 |
| Stone | 20.073 | 3.971 | 20.044 |
| Macadam | 7.499 | .254 | 7.753 |
| Totals | 136.479 | 5.958 | 143.437 |

The above does not include the pavement and repavement laid by the railroads and street railway company in the streets and alleys. During the last year 89,044 lineal feet of new curb was set in Omaha at a cost of \$64,151.48. In grading, 376,214 cubic yards of work was done, costing \$74,896.21, which makes a total grading, not including grading done by property owners at their own expense, of 9,100,000 cubic yards, costing about \$1,780,000. The city asphalt plant produced during the year 1911, 4,739 boxes of asphalt surface, which, if laid one and one-half inches thick, would equal 30,803 square yards. By actual measurement 28,803 square yards were laid in the various street repairs and street cut work with the use of only 209.5 tons of refined asphalt. This result was obtained by the addition of a certain percentage of old asphalt taken from resurfaced streets, crushed and mixed with the new surface material, thereby utilizing the bitumen of the old asphalt as well as the sand and cement filler used in the surface mixture. These repairs were distributed over the entire asphalt pavements representing about fifty miles, or more than an area of 1,000,000 square yards of paved surface.

County Expende Million on Roads

Los Angeles, Cal.—The current year shows the greatest record for road construction in the history of the county. In improving 115 miles of roadway, more than half a million tons of rock, and oil in excess of 50,000 barrels has been applied. This has necessitated an expenditure of \$1,000,000. These facts appear in a report being compiled by F. H. Jayner, chief engineer, to be presented to the Board of Supervisors shortly after the first of the year. It is likely that more oil would have been put on the roads had the supply been adequate. Shortage of freight cars reduced the oil supply materially and the delays handicapped the highway commission in its work.

New Street Markers in Place

Wheeling, W. Va.—The street markers have arrived from the factory in Canton, O., and have been placed on the lights. The markers circle the upper part of the large round globe of the light and the letters are done in dark red and are transparent, that they may be as easily read by night as day. The letters are plain Gothic and about four inches wide. The streets running east and west, from the river to the hill, will no longer be known by name but by numbers, commencing in South Warwood, old Loveland, and running north to 24th street, formerly known as Glenova.

City Makes Many Municipal Improvements in Year

Sioux City, Ia.—Municipal improvements advanced rapidly in 1911. The most substantial improvement of the year was the laying of five and one-half miles of paving at a cost of approximately \$120,000. In the opinion of K. C. Gaynor, city engineer, more paving was laid in Sioux City in the last year than in any other year. All the paving is of concrete, with the exception of two blocks on Virginia street. This paving was all done by one firm, Plinn & Hanlon. Five and one-half miles of curb and gutters also were laid in 1911. Among the other public improvements is the Leeds water plant, including station, engines and tower, at a cost of \$18,000; the water plant in Morningside, \$6,500, and twelve miles of new mains and other improvements, \$55,000. The city's parks were increased by the addition of Fairmount Park in Greenville, "Colesad" Park in Cole's addition and the purchase of land for a park in Leeds.

Paves 22.03 Miles of Streets in Nine Months

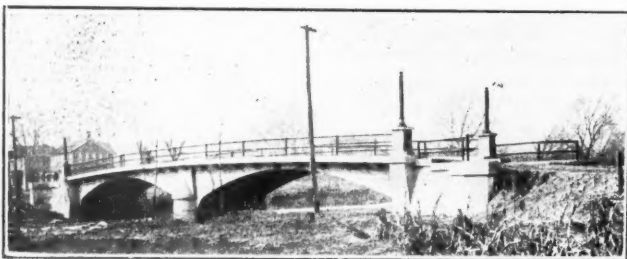
St. Louis, Mo.—For the nine months of 1911 from April 1 to the present the city has built 22.03 miles of streets, according to figures made public by Street Commissioner James C. Travilla. Two miles were of wood blocks, 11 miles brick, 2.74 asphalt, 3.52 bitulithic and 1.79 telford. The old-style pavement, granite blocks, was used on only 84-100ths of a mile. Five and eighty-six one hundredths miles remain to be completed on contracts that are let. A report for 1910 shows that 30.99 miles were built. In 1911 13.72 miles of alley paving has been laid. The alley paving in 1910 was 12.60 miles. For the fiscal year of 1910 the actual cost of street improvement was \$1,423,529; for the nine months of 1911, \$1,112,028.

County Saves Money in Building Bridges

York, Pa.—Fourteen concrete bridges were erected across streams in York County during the past three years at an aggregate cost of about \$50,000 to the taxpayers. The County Commissioners encountered much opposition in supplanting the wooden and steel structures with more modern and durable improvements which were made in accord with plans and specifications prepared for them by W. R. Smith, Jr., the county engineer. The method adopted by the retiring officials at the beginning of their term enabled local concrete firms to present bids and secure the contracts in preference to foreign concerns and resulted in a great saving to the county. It is estimated that the county saved about \$68,000 by the procedure. While the thirteen bridges built in the county are a credit to the county because of the character of their design and the excellent manner in which they were constructed, the crowning effort of the County Commissioners is the rebuilding of the College avenue bridge which was condemned as unsafe and closed to public traffic for four years. It is stated that an entirely new concrete structure at this point would have cost \$150,000. The reinforcement of the steel structure with concrete with the exception of the span across the Codorus creek, together with the rehabilitation of this portion of the bridge so that it can be used for public traffic for at least 20 years cost the county \$28,295.45. The supplementary contract awarded the Hartley-Zeigler Company October 10, 1910, for the construction of the western approach called for a consideration of \$5,016.67. The bridge has been inspected by a board of inspectors and much favorable comment made upon it.

New Concrete-Steel Arch Bridge

Germantown, O.—The illustration shows the new 120-foot two-span concrete-steel arch bridge just completed on the Dayton pike over Little Twin creek at Germantown,



Courtesy Dayton Daily News.

GERMANTOWN CONCRETE STEEL ARCH BRIDGE.

which was designed by Stanley R. Sharts, C.E., and erected by Contractor Charles Bird, of Springfield, O., under the supervision of County Surveyor Edward A. Moritz. The bridge has two 56-foot parabolic arches, with a rise of 6 feet each, and has circular curves of 48-inch radius at the springing lines of each arch. The roadway is 16 feet between curbs, with 4-foot 6-inch sidewalks. The arches are 18 feet 6 inches outside width, and part of each sidewalk is carried as a slab on cantilever braces projecting from the outside face of the spandrel wall. Expansion joints are provided in the spandrel walls and sidewalks. Twisted bars with stirrups were used for reinforcing the arches. The cost of the bridge was approximately \$7,200. The electric lights at the ends of the bridge were provided by the village council of Germantown.

Advocates State Highway Department

Columbia, Mo.—A State Highway Department, with county highway departments in all counties in Missouri, in charge of the plans and execution of road building projects all over Missouri, is the plan of Curtis Hill, State highway engineer, who advocates the removal of the State Highway Department from the control of the State Board of Agriculture and its installation in the new capitol building in Jefferson City, on an equal footing with other State departments. Mr. Hill states that in his judgment the State highway engineer should have some control of the expenditure of State money on roads, and where a county has taken the initial step of asking State aid in building roads the engineer employed by the State should inspect plans and see that the work is done in an economical and efficient manner. This could best be done with the creation of county highway departments to take over the work of the county highway engineers and the thorough organization of all highway work in Missouri. Missouri has 110,000 miles of public roads, 90,000 culverts and 16,000 bridges, upon all of which there is expended annually \$3,000,000 through 400 road overseers. This expenditure should be supervised by competent authority, at least partially vested in this State.

Granolithic Pavement Will Add to Beauty of Public Square

Elizabeth City, N. C.—The city contractors for sidewalk paving have started work on laying a granolithic walk leading to and circling the Confederate monument in public square. The walks will start at Main street from the South side and at Matthews street from the North and will be four feet wide. Around the base of the monument a walk of the same width will be paved. This will be a marked improvement to the public square, which is really the squares of the United States court house and postoffice and the County court house thrown together and the old Ellicott street, which was closed by the city authorities at the urgent request of the Daughters of the Confederacy. The monument is a distinct ornament to the square and the city and is a source of pride to all of the citizens. It is probable that the erection of this monument, together with the granolithic walks and the grading of the court house square are the beginning of a movement launched by the Civic League for making a city beautiful and that before many years have passed, Elizabeth City will be able to boast of many points of interest and attraction within her own borders.

SEWERAGE AND SANITATION

City Officials Tramp Through Sewer System

East St. Louis, Mo.—A tour of inspection has been made through a mile of the new East St. Louis outlet sewer which was completed last week. E. F. Harper, city engineer; Gus Hartman, Harry Cline and Elmer Rodenberg made the inspection, the trip taking three hours. The men were clad in hip rubber boots and rubber coats. Each carried an electric searchlight. The trip was long and tedious, as they had to wade through a heavy slime that has accumulated in the sewer, which is submerged about 25 feet. The mile of sewer inspected is 10 feet in diameter, large enough to accommodate a pair of horses and a load of hay. It extends from Kansas avenue to the new pumping station. Next week the sewer will be flushed and several city officials and newspaper reporters will make the trip through the entire sewer system.

Thieves Dig Up City Sewer System

Stockton, Cal.—After tearing up a part of the city's sewer system and selling the pipe to junk dealers, three men have been arrested and put in jail. The three have made a statement to District Attorney Foltz. The pipe was dug up at the Boggs tract and the men declare that they committed the theft in broad daylight. A few persons who inquired as to what they were doing received satisfactory replies and the work of unearthing pipe continued day after day. One joint was disposed of every day, and when the men were arrested they had sold more than \$150 worth.

Few Sewers to Be Constructed This Year

Binghamton, N. Y.—From present indications there will be comparatively few sewers asked for this year, the large amount of sewer construction done during 1911 being sufficient to meet the present wants of the city. Alderman Bert Read will probably ask for several lateral sewers in the Fourth ward, accommodating a large number of residences to be erected the coming spring. The Sixth ward residents will request the construction of a trunk sewer that will accommodate the new Tompkins street sewer, which is useless until an outlet is provided, but as this will require the expenditure of more than \$20,000, a taxpayers' election must be called to provide funds. It will also be necessary to have a bonding election for the proposed First ward trunk sewer to connect with Lestershire, and it is probable that both propositions will be included in one sewer bond issue. The election will probably be held during the month of February, so that, if the proposition is approved, the contracts may be let and work begun in the spring.

Municipal Buildings Abolish Roller Towels

Buffalo, N. Y.—One of the new leaves to be turned over by the Health Department in 1912 is the banishing of the roller towel from the municipal building because of sanitary reasons, substituting the individual towel. "The old contract for the use of towels has expired," said Health Commissioner Fronczak, "and I believe it's right that the Health Department and the other city bureaus in the building should lead the way in the crusade against the unsanitary roller towel. In a short time I expect to recommend a resolution to the Common Council which will make it mandatory to abolish the unsanitary towel on a roller. It is probable also that measures will be taken to do away with public drinking cups, brushes and combs."

Mayor Will Fight Smoke Nuisance

Indianapolis, Ind.—Mayor Shank has assumed personal charge of what he says is going to be an aggressive campaign against violators of the city smoke ordinance. The Mayor, for the time being at least, has taken the enforcement of the ordinance out of the hands of the Board of Public Safety and as a result Jacob P. Brown, city smoke inspector, has filed eleven affidavits against as many alleged violators of the measure. "This is only the beginning," said the Mayor. "Brown is going to have a free hand, and I have instructed him to file affidavits against every violator of the ordinance who has not already taken steps to abate smoke. I am tired of fooling along with smoke violators. They have had plenty of time to do something, and now we are going after them. We are going to keep filing affidavits against a violator week after week until he does something to abate smoke. If they don't like it, they had better get the ordinance repealed."

WATER SUPPLY

Mud Nuisance Serious; Two Plans Considered

Atlanta, Ga.—A meeting of the Special Mud Committee was held in the Mayor's anteroom at the City Hall December 26 to consider ways and means of abating the mud nuisance to the Atlanta Steel Company and to utilize the water which flows out of the filters and coagulating basins when they are flushed. The committee considered two plans. One is to have the two basins, one for clear water and one for the coagulating basin water, and to pump it all back into the reservoir. The other is to have one basin for both, and not pump it back. The first plan will cost about \$35,000; the latter will cost about \$5,000. The first plan will make possible the saving of 100,000,000 gallons of water per year. The second plan will save no water.

Dam at Stony Brook Reservoir

Norwich, Conn.—The work on the spillway dam corewall of the Stony Brook reservoir is progressing as rapidly as weather permits. The corewall is now about 15 feet high and but little more will have to be poured. The embankment against it is being carried up at the same time and the riprapping is also under way. The embankment is about 50 feet in width at the bottom and gradually slopes to the



Courtesy Norwich Bulletin.

DAM AT STONY BROOK RESERVOIR.

top, where it will be several feet across. The dam will be 300 feet long and 20 feet high. From the point in the dam where the spillway is located there extends to the west a paved and walled way for the brook from the overflow of the pond. This will be built for about 300 feet, where the brook will be allowed to seek its own course into the former brook. The picture shows the main dam at Stony Brook reservoir. The main dam is 800 feet long and 32 feet wide.

Donates Water System

Ashburnham, Mass.—Ivers Adams, a Boston millionaire, who is a native of Ashburnham, has offered to install a new water system for the town at his own expense. The selectmen will call a special town meeting to take action on the matter.

Work Complete in Water Department

Waterbury, Conn.—All the outside extension work in the water department has been completed for the year, and Supt. John R. Walker stated that more pipe was laid during the past season than ever before in the history of the city. Six, eight and ten inch pipe were laid in different sections of the city. The appropriation for this department originally, in round numbers was \$20,000 and of this amount \$6,800 has been withdrawn from the department and applied to other departments, leaving a balance in round numbers available for the water department of \$13,200, which was nearly all expended.

Will Turn Water Into New Reservoir

Vallejo, Cal.—Water is to be turned on in Vallejo's new 13,000,000 gallon reservoir at Fleming Hill. The work on the new structure was commenced about the middle of June and the contract price was \$36,000. Vallejo's reservoirs are capable of storing 16,000,000 gallons of water, or enough to last the city for twelve days. Two fourteen-inch pipe lines bring the water into the city.

In his report, which will be submitted to State Controller Nye, City Auditor George Hildreth shows that the municipal water plant has paid dividends amounting to \$62,000 into the city coffers the past year.

Buys Interest in Water Main

Bristol, Va.—By the payment of \$29,000 Bristol, Tenn., acquired a one-half interest with Bristol, Va., in the new Preston water main. The Virginia city constructed the main at a cost of \$100,000. The Tennessee city owned the spring, and the amount paid represents the difference between the cost of the construction work and the value of the spring.

Find Water Plant Is Good Investment

Macon, Ga.—That the water plant is a paying establishment is attested by the report of the Commissioners for November, which was read at the last meeting of City Council. This report shows that during the month a net profit of \$4,491.23 was made. The previous month, the first under the administration of the Board, a profit of \$1,401.79 was shown. The earnings would be larger but for the fact that the Commissioners are paying the interest on the bonds, amounting to \$2,654 per month, which is counted as an expense item. The total water sales for the month were \$11,781.22.

Water Main Bursts

Cincinnati, O.—The bursting of the huge water supply main at Front and Berry streets recently resulted in several thousand dollars' damage and much inconvenience to the residents of Bellevue and Dayton. Shortly after 3 o'clock one day last week the residents of that portion of Newport were frightened by the roaring of water. Secretary D. L. Kehl of the water works was notified and a crew of men rushed to the scene. The water was turned off and the men began the work of repairing the break. During the time the water was shut off the towns of Bellevue and Dayton were furnished with water from the Covington reservoir. So great was the force of the water that dirt and rocks were hurled many feet from the break.

STREET LIGHTING AND POWER

San Francisco Plans Using Electricity for Heating

San Francisco, Cal.—San Francisco may soon enjoy the pleasure of being not only lighted with electricity, but also being heated by the fluid. Officials of the Kuhn interests of Pittsburgh are looking over the ground for a possible franchise from the Board of Supervisors to lay power lines under the streets of the city to carry electricity to the different business houses and residences for heating purposes. It is claimed by the experts that electricity can be furnished for heating purposes in California at a cheaper rate than gas, or than coal can be supplied by householders. Several of the managers of the Kuhn interests will go into the Sierra and look over several of the undeveloped power sites at which it is proposed to develop their electricity. Engineers have been working in the mountains for the past few weeks and have several water power sites in view, any one of which, it is said, is capable of producing sufficient power to heat the city and a part of Oakland. The price to be placed upon the electricity has been figured out and it is estimated that if a long enough franchise can be secured that electricity can be sold for less than 2½ cents per kilowatt.

New Street Lights Planned

Haverhill, Mass.—Lighting up the entire vicinity from the Little River bridge to the railroad bridge on Winter street, four gas arcs are to be placed in position by the Haverhill Gas Light Company, the application for the permit to maintain the lights having been granted by the Municipal Council. The gas company cannot very well help swell the fund now being solicited for the lighting of the principal streets, but feels that it will be doing considerable toward it by the new lights which will be installed at once. The company will erect two poles on each of which two gas arcs will be placed. These burn very brightly and will turn what is now a dark locality into one that will be nearly as light as day. The rehabilitated gas plant, with its grounds which have been greatly beautified, is now a fine-looking establishment and one of which the citizens may well feel proud, so that lighting it up at night is a good advertisement for the city. The posts will be of the ornamental variety and the arcs of the brightest made. The company has for some time maintained a gas arc outside of its Merrimack street office, assisting in the lighting there and the new move is a progressive one on the part of Manager Thomas Nickerson, by whom it was suggested.

Newark Would Merge All City Lighting

Newark, N. J.—As a legacy to the incoming Common Council the Committee on Municipal Lighting will recommend the establishment of a single department of the city government to take charge of all questions pertaining to public lighting. In the same manner the question of municipal lighting as an economic and feasible proposition is also passed along. The committee's plan has been worked out tentatively by its chairman, Alderman Albert H. Biertuempfel, and it will be embodied in the final report to be presented to the council. The information was gained by observations of lighting conditions in other cities in a recent trip to the West, in which Mr. Biertuempfel and Electrical Inspector John J. Gaffney participated. The tourists found the cost of street lamps in Detroit to be \$30.33, and of incandescent lamps in public buildings to be 2 7-10 cents per kilowatt. In Chicago, by the operation of a hydro-electric plant run by the water of the canal, current is obtained at one cent per kilowatt. The cost of street lamps is \$38.16 per year. In Cleveland the cost is \$54.96 for arcs and 3½ to 4½ cents per kilowatt. In Buffalo the cost is \$56 for arcs and 3½ per kilowatt for small consumers. The report states that Chicago proposes to make itself one of the best lighted cities of the United States, at comparatively little cost, by utilizing all the efficiency of the water of the canal, giving it 25,000 horsepower.

Power Prices Cut for New Year

Yonkers, N. Y.—Public announcement that the promised reduction in the charges for electric current for lighting and power, which Mayor Lennon succeeded in getting from the Yonkers Electric Light Company, will go in effect on January 1, has been made by the corporation. That the company had made the promise was told by Mayor Lennon at the banquet held by the United Business Men's Association, in Park Hill Inn, several weeks before the election. The minimum rate for lighting current has been reduced from 15 cents to 13 cents per kilowatt hour, and for power current from 13.4 cents to 12 cents. The old and new rates are as follows: Lighting, first and second hours of average use of connected installation, old rate, 15 cents; new rate, 13 cents; third and fourth hours and over four hours, no reduction. Power, first 60 kilowatt hours monthly consumption, old rate, 13.4 cents; new rate, 12 cents; next 300 kilowatt hours, 9 cents; all kilowatt hours in excess of 360 at 6 cents per kilowatt hour. Minimum monthly charge, \$3. For automobiles, storage batteries and refrigeration purposes, the new rates will be: First, 2,500 kilowatt hours, 5 cents; next 2,500 kilowatt hours, 4 cents; all kilowatt hours in excess of 5,000, 3 cents. Minimum monthly charge, \$25; 50,000 kilowatt hours at 3 cents.

Electroliers Beautify City

Waterloo, Iowa—Many improvements were made in the city during the year 1911, but the most notable improvement in illuminating the municipality was the installation of the boulevard cluster lamps in districts East and West. Early in the year the City Council prescribed a territory in the business sections of the city wherein a great white way was recommended. Although the whole district has not yet been improved with the cluster lights, in the spring the territory now unimproved will be brilliantly illuminated. The ordinance provided that the property holders on streets whereon the lamps are placed must pay for the post or standard, the lamps and the cost of installation and the city will furnish the current for illumination. For the lamps already installed the average cost to property holders has been about \$105 to \$110 a standard. Nearly all of the blocks contain ten lamps and none less than eight. Thus far 52 standards have been erected in the West Side business district and 80 in the East Side, making a total of 132. Outlying districts have been improved by gas lamps. The city now maintains 123 arc lamps and 480 gas lamps, with a total daily lighting of 3,815 hours and 10 minutes. A careful survey is made nightly by the Police Department of the lighted districts to ascertain whether all lamps are burning. If a gas lamp is dead a reduction for the entire night is made from the bill against the city. For arc lamps time is counted and the reduction made. During the year the arcs were out 3,027 hours and 407 dead gas lamps were reported. It cost less than \$25,000 to illuminate the city during the last year. The warrant register shows \$23,135.45 paid out for gas and electricity.

Salada Beach to Celebrate Electric Light by Carnival

Salada Beach, Cal.—The turning on of the electric power on the Coastside will be celebrated by an all-night dance and carnival. The Marine View Casino has been selected as the place where, in the presence of the assembled residents, the carnival queen will throw on the switch that will set the entire Coastside twinkling. The event will take place on January 20, when the Halfmoon Bay Light and Power Company, which has been extending its lights throughout the Western part of San Mateo County, will commence operating. Moving pictures and a vaudeville programme will be part of the celebration.

City Light Plant Tests New Turbine

Pasadena, Cal.—General Manager C. W. Koiner of the municipal light plant reports that the preliminary runs of the new steam turbine engine have been very satisfactory, and it will be tested in the course of two or three weeks for efficiency. He said:

In making the preliminary runs of the steam turbine we carried all the load of the city for sixty hours without shutting down. The total load amounts to a little more than 1,500 kilowatts. Everything worked out satisfactorily and the new engine will be tested out in the course of two or three weeks for efficiency. This new turbine doubles the generating capacity of the plant, giving us sufficient capacity to meet all possible emergencies that might arise. It brings the total capacity of the apparatus up to 4,500 horsepower, normal rating.

City Will Have Cheaper Gas Rate

Schenectady, N. Y.—A reduction from \$1.20 to \$1 per 1,000 cubic feet in the price of gas in Schenectady has been declared by the Mohawk Gas Company. The new rate will become effective as soon as formal permission to lower the price can be obtained from the Public Service Commission, according to statements by M. Webb Offutt, general manager of the gas company. The action of the company is the result of agitation for cheaper gas by Charles C. Duryee, mayor of Schenectady; Dr. George R. Lunn, the Socialist mayor-elect, and other residents, ever since Mayor Duryee went into office. Petitions have been sent to the company from time to time, and about a year ago Dr. Lunn took the matter to the Public Service Commission. The situation remained dormant, however, until a few weeks preceding election, when Dr. Lunn announced that Chairman Stevens of the Public Service Commission had assured him the Mohawk Gas Company had submitted a proposition to lower the price of gas substantially.

Public-Spirited Citizens Erect Light Standards

Wilkesbarre, Pa.—Twenty-five new electric light standards have been erected on South street and the armory. The standards have been erected at the expense of the property owners, and make a dazzling effect when lighted at night. They are of the cluster type, such as have been erected around the public square and in other sections of the city. A number of these standards are to be placed on both sides of the city hall in the near future. On Main street, the owners of residences are having the standards erected as well as the business men. Two have been placed in front of Senator Catlin's home. Others have been placed in front of the many business houses. At the two corners of Ross street there are about eleven standards in all. It gives the street a boulevard appearance, and the standards are decorative as well as thoroughly useful. It is said that an effort is being made to have the government instal the standards along the curbing on both sides of the post office.

City to Have New Lighting System

Niles, O.—A new lighting system is being installed and the work is being rushed as rapidly as possible so that the lighting may be completed within a few weeks. The composition conduits are being laid in the trenches along the curb, the joints being cemented with asbestos cement and covered with boiling tar. When thoroughly dry, six inches of concrete will be placed on top of the conduits, making them immune from the effects of dampness, as there never will be any occasion for raising them. Opposite each light foundation the curbstone is tapped to a sufficient size to permit a branch conduit reaching up through the foundation to where the connections will be made in the light base. Those bases are of heavy cast iron and will be put in place as soon as the concrete of the foundations will permit, after which all work about the sidewalks can be completed. All equipment for the new lighting system has been received and is now stored in the city warehouse. The poles are of copper and will present a handsome appearance.

FIRE AND POLICE

Statistics of Middletown Fire Department Filed

Middletown, Conn.—Chief of the Fire Department George S. Pitt has compiled some interesting statistics concerning his department which he will present to the January meeting of the Common Council. There were 75 alarms during the year, of which 30 were box alarms, 39 were by telephone and six were still alarms. There were five more box alarms in 1911 than in 1910. The department laid 10,050 feet of hose and used 944 gallons of chemicals and raised 475 feet of ladders. The tank on the auto truck was discharged 21 times and there was laid 4,200 feet of chemical hose. Chemicals were used on 48 fires, while the water hydrants were employed but nine times. The other 22 fires were out when the firemen arrived. There were five false alarms, only one of them coming from a box. The loss on buildings was \$14,258.10 and the insurance paid on account of the losses was \$13,958.10. The loss on contents of buildings was \$3,467.07 and the insurance paid on account of these losses was \$12,367.07. The total losses were \$17,650.07 and the total insurance paid was \$17,286.17 or \$367.90 less than the losses. Last year the total losses were \$30,829.41. The big fire of last year occurred in the Y. M. C. A. building, while the heaviest loss this year was sustained at the fire in the Central school building.

Fire Report for Year 1911

Burlington, Vt.—Burlington during the year just closing has had more fires than ever before in her history, but owing to the extensive provisions made for extinguishing a little blaze there have been few years since the city has been of any size when the loss has been smaller than during 1911. The alarms answered by the department during the past twelve months number 143, which is about 40 more than in any previous year. Of these 61 were bell alarms and two of the others were in answer to appeals from out of town, one at Shelburne and another at a colored resort near Fort Ethan Allen. Although no official figures are obtainable at the present time, it is doubtful if the total loss exceeds \$45,000. According to the judgment of Chief Niles, one of the important features in making the success of the year past is the work done by the automobile truck which entered the department in the early part of February. The machine has done much better than was expected and the cost of its maintenance has been only a small part of that of keeping a pair of horses. During the eleven months it has been in the service the machine has gone to every fire and in all traveled over 700 miles. The average cost of maintenance, including everything, is shown to be 27 cents per day while that of keeping the horses is \$1.33 per pair each day. The machine is three times as efficient as it covers the distance at more than three times the speed of a pair of horses and at no time was the automobile at fault when it came to starting or traveling.

City's Annual Fire Report

South Bend, Ind.—With a record-breaking number of alarms, the fire department closed the year with a remarkably low fire loss. The total damage done by fire is estimated at \$28,000, which is \$36,000 less than last year. Fire loss in 1909 was \$42,000. No serious fires are recorded for 1911, although prompt response and action by the firemen curbed many which threatened to add materially to the fire loss before brought under control. An unusually large number of runs was made by the department, a total of 285 calls being received. One hundred and sixty-two still alarms and 123 box alarms comprise the list of the calls, nearly a tenth of which were false alarms. The estimated value of buildings at risk during the year is \$700,000, while contents valued at \$390,000 were endangered. Loss on buildings was \$16,000 and on contents \$12,000. The total value of the property at risk is \$1,090,000. Sixty-six men are now engaged to protect the property of South Bend residents from fire. It has required \$83,000 to maintain the department during the year, \$63,000 of which was expended for salaries and the remainder for incidental expenses. The expenses last year totaled \$73,000, \$63,000 of which was paid out in salaries and the remaining expenditures incurred in miscellaneous ways. In a total of approximately 850 runs the department covered 1,500 miles, while over 100,000 feet of hose were laid. Four thousand feet of ladder were raised. Thirty thousand gallons of chemical were used.

Commission Finds Police and Criminals in League

Chicago, Ill.—"There is and has been for years a connection between the Chicago Police Department and the criminal classes of the city," says a preliminary report to Mayor Carter H. Harrison made by the City Civil Service Commission, which has conducted an exhaustive examination of the police department. The report followed within a few hours the dismissal from the service of John Revere, the second police inspector to lose his position as a result of the investigation. Another official, Lieut. John "Sandy" Hanley, was exonerated, and Captain Bernard Baer was sent to the mayor for action on charges of inefficiency and neglect of duty. This brings the number of disciplined officials to more than a dozen. Inspector Charles Dorman and several lieutenants and captains heretofore have been removed and the commission began hearing charges of a similar nature against an inspector, John Wheeler, four lieutenants and a captain.

\$200,000 for Fire Bureau

New York, N. Y.—The Board of Estimate has made an allowance of \$200,000 to Fire Commissioner Johnson for the establishment of the much-discussed Fire Prevention Bureau. The money will mostly go for salaries. For rent of the new bureau, contingencies and supplies, \$30,000 will be set aside. The rest will go for salaries as follows: Chief, \$5,000; deputy chief, \$4,000; chief inspector, \$4,000; assistant electrical engineer, \$3,000; two electrical inspectors at \$1,800 each; chief examiner, \$2,500; five examiners at \$1,500 each, two supervising inspectors at \$2,000 each, five inspectors at \$1,800 each; twenty at \$1,500 each; fifty at \$1,200 each, two assistant fire marshals at \$2,500 each, four at \$1,500 each; draughtsman at \$1,800, assistant chemist at \$1,800, record clerk at \$1,500, stenographer and typewriter at \$1,500, two stenographers and typewriters at \$1,050 each, sixteen stenographers at \$900 each, clerk at \$1,500 and three clerks at \$900 each. It is not known as yet whether the appointments will be from civil service lists.

Plans Central Exchange for Fire Alarms

Harrisburg, Pa.—In an effort to rid the city of the many false fire alarms and the much-talked-of abuse of the fire house telephones, by individuals, City Electrician Clarke E. Diehl will soon present a plan to Councils to establish a private telephone system in the fire houses with an exchange in the Mayor's office. It is the plan of the electrician to have a competent man stationed at the private exchange and, when the fire reports are made, he is to determine which company is to respond. With such a system in case of a large fire all of the companies can be communicated with at one time, giving the place of the fire, thus avoiding the run to the alarm box.

Has New Fire Apparatus, But Scant Water Supply

Hagerstown, Md.—Complaint is being made that, while the Fire Department is spending money in large sums for fire-fighting apparatus, the water supply is so poor that it is inadequate for fire fighting, and Mayor Scott has just sent a communication to the officials of the Water Company to that effect. A new auto fire engine has just been purchased for \$9,000, and the city authorities are contemplating legal action for better water conditions. There is some concern over the disappearance of the schedule of the water rates agreed upon in 1881, which formed an exhibit in the litigation now pending before the Court of Appeals between the water company and the city.

City Buys Chemical Auto Wagon

Danville, Pa.—The combination chemical and hose auto wagon ordered by the Friendship Fire Company of Danville, in September, has arrived, and a demonstration will be given by a representative of the Keeler Motor Car Company, manufacturers of the outfit. The machine is made over from a Panhard, a French motor car, and its price is \$2,500. It has two 30-gallon chemical tanks, space for 250 feet of chemical hose and 500 feet of fire hose and space for five men on the riding board and seats. Eugene Kemp, of the Keeler company, a former resident of Danville, conceived the idea of making over a motor car into a fire truck and his plan has been very successful. It is very probable that the other volunteer company at Danville will also order a motor chemical, and Mr. Kemp has a big Pierce ready for that purpose. The machine has solid tires, a 68 horsepower engine and can run 60 miles an hour.

GOVERNMENT AND FINANCE

Spends Five Times as Much as Usual for Improvements

Yonkers, N. Y.—City Engineer Cooper made the statement recently that more public work was going on this year than at any other time in the city's history, and he declared that if the winter continues to be open there should be no reason why contractors cannot keep their workmen busy without interruption.

An examination of the report for the year just closing, submitted by Secretary James V. Mahoney, of the Board of Contract and Supply, to Mayor Lennon proves Mr. Cooper's statement to be correct and further reveals the fact that 1911 was a record-breaking one for the Board with respect to the number of contracts awarded and the grand total of the bids which were accepted.

Thus the aggregate of contracts for 1911 is \$1,119,120.77, as compared to \$240,159 for last year and \$247,000 for 1909. From this comparison it will be shown that nearly five times as much was spent or authorized to be spent by the Contract Board this year than in any other year.

Town Has Dual Government

Summit Hill, Pa.—This borough is in the hands of twin Councils, and a dual police force is keeping the peace, as a result of the confusion produced when Judge Heydt reduced its ward divisions from four to three. This state of affairs will be continued until the Superior Court, to which tribunal the situation has been referred, decides whether the town should have chosen Councilmen according to the old ward divisions or the new. The voters prepared for that emergency by having sets ready for either case. Each set organized and appointed a police force, and each will legislate until the court acts. Judge Heydt's re-division of the borough was such that candidates nominated in the primary afterward found themselves on the ticket to represent wards in which they no longer resided as a result of the change in boundaries.

Councilmen Elected at Large Do Not Neglect Wards

Boston, Mass.—Statistics of the appropriations by districts in the last two years of the City Council have been prepared by Councillor John J. Attridge to refute the criticism sometimes heard that under the city charter, with no provision for ward or district representation certain sections of the city are neglected. Mr. Attridge finds that never before in the history of the city have all parts of the city been treated so well. This information will be presented to the voters, not only by the Citizens' Municipal League candidates for the City Council—Messrs. Ballantyne, Coulthurst and Kenny—but by other speakers who will go on the stump. A map has been prepared in which the leading improvements are outlined, section by section. In the last two years East Boston has received improvements amounting to \$642,970; Charlestown, \$580,100; North and West Ends, \$427,871; South End, \$1,278,083; Back Bay, \$200,900; South Boston, \$677,687; Roxbury, \$610,084; Dorchester, \$1,055,188; Jamaica Plain, \$305,667; West Roxbury, \$817,117; Brighton, \$239,469; Hyde Park, \$5,000. Some of the improvements listed, such as the widening of Pleasant street (\$900,000), which is credited to the South End, or the aquarium (\$125,000) in South Boston and the zoo (\$92,200) in Franklin Park and assigned to Jamaica Plain, are of little less benefit to other districts, but the majority of the improvements are strictly local. In the statement accompanying his tables Mr. Attridge says in part: "Under the new charter, which has been in operation for two years, the nine councillors, who with the mayor control the government of the city, are elected at large. They represent not the districts in which they live, but the whole city, and are held responsible to every man who casts his vote in a city election. There have been attempts, and there may be more, to change this feature of the new charter, for a number of voters are in favor of ward representation, claiming that the districts in which no councillor lives are neglected in favor of those having a resident in the Council. The statistics answer this argument, for the members of the City Council for the last two years have come from but seven of the twenty-five (now twenty-six) wards, namely Wards 3, 5, 9, 11, 15, 17 and 20, yet the other wards have had a goodly share of improvements, which have been the result of treating the city as a whole, irrespective of districts."

City Spends Large Amounts in Municipal Improvements

Hutchinson, Kan.—Probably more money has been expended in municipal improvements during the past year than at any previous time in the history of Hutchinson. The following is a summary of municipal improvements which aggregate over \$125,000: Street paving, \$80,200; street curbing, \$13,000; sidewalks built by city, \$15,000; other sidewalks built, estimated, \$10,000; grading of streets, \$15,000; sewer work, \$3,000; other street improvements, \$5,000; city incinerator, \$1,000; headgate, \$600.

Retiring Mayor Says Financial Commission Is Needed

Lawrence, Mass.—Mayor Cahill, in a communication addressed to taxpayers, advocates the appointment of a Finance Commission by the Governor and confirmed by the Council to aid in the rehabilitation of the city's finances.

He says that the attempt made last summer to have a special loan of \$500,000, authorized to be expended under a commission named by the Governor, was a blunder, which he detected and successfully opposed. The situation now, however, is different, he believes, and had he been retained in office he would have advocated such a commission.

Chicago's Annual Financial Report

Chicago, Ill.—The city of Chicago paid out nearly \$1,500,000 more than it took in for the year 1911, yet, according to the reports of city officials, the municipality is in better shape financially than at any time in the last ten years. The city also nearly has succeeded in driving the "loan shark" from the city hall. City Treasurer Henry Stuckart and Jacob Lindheimer, his assistant, are working in co-operation with Comptroller John E. Traeger to rid city employees of the usurers, according to the annual reports of the two officials. The city spent \$72,728,000 during the year 1911, according to the annual report of Mr. Stuckart, who handled all the city money. Receipts for the year were \$71,286,000. The city received more than \$440,000 as interest on the funds deposited in various banks. The board of local improvement's annual report, sent out by President George A. Schilling, shows 133 miles of pavement laid during the present administration. Sixty-six miles of sewer were laid, 25 miles of house drains and 217 miles of cement sidewalks. The department shows collections of \$6,240,312.19 and vouchers issued to contractors for \$5,831,431.71.

Salt Lake Now a Commission City

Salt Lake City, Utah.—Salt Lake City passed under the commission form of government the first day of the year, when Mayor Samuel C. Park and four Commissioners went into office. Five hold-over Councilmen, whose terms did not expire December 31, were legislated out of office.

STREET CLEANING AND REFUSE DISPOSAL

Say Garbage Men Steal Receptacles

Hoboken, N. J.—The West Hoboken Board of Council have received a complaint signed by several citizens against the garbage collectors. The complaint charged that when barrels filled with ashes and garbage were set out the men broke them up and used the staves to heighten the sides of their trucks. Small receptacles, the complaint said, were carried away and heavy cans were thrown down with such force as to smash them.

Crematory Is Proving a Boon to the City

Tampa, Fla.—Actual comparison of costs shows that the crematory of the sanitary department of this city is being operated at less cost and more economically than plants in many other cities of the same size as Tampa, was the statement made by Sanitary Chief Bailey before the City Council in connection with his report for the quarter submitted to that body. He further stated that he was making arrangements to utilize the refuse from the crematory so that the income of the plant would be increased and the expense lessened. Chief Bailey stated that the ashes from the plant are rich in potash and that offers have already been made the city by fertilizer companies to use this ash. Samples of this ash have been sent to Jacksonville for analysis, and a reply is expected within a few days, when the chief will know exactly what is the commercial value of the refuse from the crematory. "Metal from the tin cans can be melted down and converted into window weights and other articles, and these items will be used to reduce the cost of operation to the city."

RAPID TRANSIT

All Cars Must Stop for Passengers

Paterson, N. J.—If a motorman of a trolley car in this city fails to stop to pick up passengers, no matter if the car is full at the time and the "Car full" sign is displayed, he is very apt to be fined. Recorder Carroll held that the law makes no distinction, whether the car is full or empty. The prospective passenger is the one to decide whether there is room. Heretofore the motorman or conductor has been the master of the situation.

Trolley Freight Service Planned by Street Railway

Boston, Mass.—The entering wedge into Boston which has been sought by street railway men for carrying freight has now been secured through the permission granted the Boston Elevated by the Railroad Commissioners. This was what the Bay State Street Railway has been waiting for, since its service south of Boston on what was the Old Colony system has been in operation some time and this final lap means much to Haverhill merchants and shoe manufacturers. Shoes may be shipped out over the trolley lines and goods can be brought in by the same method. Permission was granted to the Street Railway Company by the Haverhill City Council some time ago and grants have also been given in cities and towns around Boston. The companies were waiting for the Boston grant and now that has been given very little stands in the way. In Brockton, Taunton and other places the trolley express business has grown wonderfully and terminals have been built there. The business of the local express companies has also grown in those places and service is greatly facilitated. Farmers find the service of great benefit to them, since they can ship in provisions and milk and get back needed things from the city by means of the trolley. Elevated officials state that they will begin the work of freight transportation just as soon as feasible and the Bay State will follow, it is thought. The trolley express has proved a great boon in other cities and it is believed that Haverhill will welcome it.

Trolley Company City's Largest Taxpayer

Atlanta, Ga.—The Christmas gift of the Georgia Railway and Electric Company to the city, county and state has been presented and consisted of a cash sum amounting to \$248,026. It was the 1911 taxes of the corporation. The sum represents the taxes paid by the Georgia Railway and Electric Company on its street railways, lighting plants, interurban system and other holdings. It is by far the largest sum received by the combined city, county and state governments from any one source. This year, as usual, the amount of taxes paid by the Georgia Railway and Electric Company to the city of Atlanta exceeds the total combined amounts paid in by all the steam railroads, all the express companies, all the telegraph and telephone companies, the banks of Atlanta, the Pullman Company, and all the automobile and horse drawn vehicles.

Commission Orders Trolley Steps Lowered

Hartford, Conn.—The Public Utilities Commission has given a decision relating to high steps on trolley cars. The Commission orders the trolley companies to equip cars with steps that will suit the requirements of the public better than those in use at the present time. The Commission has ordered and directed the Connecticut Company to equip and adjust with easy double folding steps of at least 50 per cent. of all its double truck open cars; that is, at least 234 cars, which shall include all the double truck open cars put in service during the season of 1911; the first or bottom step of such double folding step to be not more than 16 inches above the top of the track rail; the second step to be not more than 13 inches above the top of the first step and not more than 13 inches below the top of the floor of the car body; one-half of the 234 cars to be equipped with such double folding step on or before June 1, 1912, and the remaining one-half to be equipped on or before July 1, 1912. The Connecticut Company is also directed to relocate and readjust on all its double truck open cars the "grab handle" so-called, at the end of each seat, by extending and lowering the same on the side posts as much as possible and still retain the present castings, for the convenience of passengers boarding and alighting from the car.

Electric Line Opened Between Two Texas Cities.

Galveston, Tex.—An electric line called the Galveston-Houston Interurban Company has commenced regular service between the two cities and intermediate points. The distance of 50 miles between the two cities is covered in an hour and 40 minutes.

Commence Street Car System

Brownsville, Tex.—Ground has been broken for the street car system which is to be constructed over the city by Sam A. Robertson of San Benito. The franchise calls for the completion of three miles of track within a year and the operation of the system as the work is completed. Motor cars will be used.

Bridge at Gallatin for Interurban Railway

Gallatin, Tenn.—The Nashville-Gallatin Interurban Railway Company has reached Gallatin in the work of grading the road and building bridges, and work is now being done on the Gallatin bridge, about two blocks from the public square. The present bridge is made of arched stone and has been in use since before the war. During the war, when Gallatin was in the hands of the Union soldiers, they had this bridge guarded, and at one time when some Confederate scouts attempted to rush past the pickets at this point, they were shot from their horses, falling dead upon the bridge. It will be replaced by a modern concrete and iron structure to accommodate both the railway and road travel, the county and railway each paying half of the cost of the modern bridge.

Three-Cent Fares for Four Hours

Toledo, O.—Toledo will have three-cent fares for two hours in the morning and two in the afternoon, and six tickets for 25 cents and universal transfers the rest of the day, as the result of a temporary agreement, pending franchise negotiations recently reached between the Toledo Railways and Light Company and the city. This announcement followed closely on the heels of the application for a receivership for the company on behalf of friendly interests in the United States Court here. Representatives of the company and the city got together shortly after the court proceeding, and within ten minutes had agreed to abide by the proposition made by the company. The new rate of fare, it is expected, will go into effect within a week. The hours are 5.30 to 7.30 o'clock in the morning and 4.30 to 6.30 o'clock in the evening.

MISCELLANEOUS

City Orders Black Smoke

Milwaukee, Wis.—Port Washington, a northern manufacturing suburb, likes dense, black, gaseous smoke. It likes it so well that an ordinance has been passed by the Council requiring that every factory enjoying the privileges of a smokestack or chimney must issue the densest, blackest, foulest smoke that it can emit. If it does not do so, it is amenable to a \$1,000 fine. "The more smoke the more business," has been adopted as the motto of the city, and that is the citizens' belief, backed by the signature of Mayor Henry W. Bolens, attested by City Clerk W. B. Krause. The difference between the smoke inspector's duties in Port Washington and those of smoke inspectors in all other cities of the country will be that the Port Washington official will be called upon to determine when the smoke is not black, dense or odorous enough.

City May Have Playground Commission

Rochester, N. Y.—Rochester, according to present indications, will soon be added to the list of cities which have a playground commission to supervise the entire work of the playgrounds of the city, instead of as at present dividing the work between the Park Board, the Board of Education and other municipal departments. Mayor Edgerton, in a recent conversation on the subject, indicated his approval of such a commission, but pointed out that before any action in the matter of appointments can be considered, the approval of the plan by the State Legislature must be gained. He said he had discussed the feasibility of the plan with those interested in playgrounds. The question has been revived at this time by the work that has been carried on during the past two weeks by Field Secretary Thomas C. Woodward, of the Playground and Recreation Association of America.

Des Moines Dedicates \$350,000 City Hall

Des Moines, Ia.—Des Moines' handsome \$350,000 municipal building—the first city hall in the United States to be built especially for the Des Moines plan of government—has been dedicated with appropriate ceremonies. State and county officials and mayors from other cities which have adopted the Des Moines plan of commission government assisted Mayor Hanna and the city council in dedicating the new structure—one of the finest of its kind in the country. The dedication of the new building was a gala affair. Being a legal holiday, work was stopped in the city and thousands of residents of the capital city of the State, whose form of government has spread the fame of the Iowa metropolis world-wide, visited the new structure. A big civic parade, followed by addresses by prominent residents of the city, composed the dedicatory exercises.

Police Banish All Gum Slot Machines

Chattanooga, Tenn.—All of the gum slot machines in Chattanooga are out of operation and are now missing from accustomed places on counters in cigar stands, near-beer emporiums, clubs and soda fountains, and members of the police department are prepared to confiscate the first machine that shows up for business. This is the result of an order issued by Chief Hill, of the police department, shortly before Christmas. There has been a controversy over the machines for some time. The company that owned them and the local dealers who coined a percentage of profits objected to the barring of these instruments of gain, because they contested the chief's claim that they were gambling devices. After a conference with Commissioner Berterton it was decided that the machines must go, and they are now out of business. Because of a few recent orders of similar nature, which were not enforced, it is believed that some of the local men will give trouble. A close watch will be kept, and the first machine found in operation is to be taken to police headquarters and demolished.

Portland to Provide Work for Unemployed

Portland, Ore.—The City Council has appropriated \$10,000 to be used in the payment for work to be provided for the unemployed now in the city. The purposes of the measure are two-fold. Primarily the intention is to furnish sufficient work for those who are out of employment to enable them to live and to weed out the hobo element sending them out of town or to the city rock pile. The work will consist of grubbing stumps in the city parks, breaking rock at the city quarry for surfacing streets and road building.

Anti-Spitting Signs Ordered

Niagara Falls, N. Y.—When the aldermen presented a resolution calling for the supply of 250 anti-spitting signs as a preliminary to the enforcement of the "spitting" ordinance, a local coal dealer offered to pay for the signs, no matter what variety was chosen by the city, if he was permitted to add an advertisement calling attention to his business. "Burn ———'s coal," would appear at the bottom of the sign if the dealer's scheme was adopted, but the aldermen foresaw trouble and allowed the resolution to go through without reference to the coal dealer's special line. It was suggested that if the advertiser's plan was adopted, other merchants would want like privileges and that a haberdasher might be readily excused were he to ask that the words "Go to ———'s for your handkerchiefs" might reasonably be added to "Do not spit on the sidewalk." Again, the signs will note the amount of fine to be imposed, and this might create complications were the reader not disposed to patronize the advertiser.

Chance for Joy Riders

Chicago, Ill.—The Municipal Court of Chicago has adopted a rule which is being hailed with enthusiasm and relief by Chicago motorists. The rule governs cases of arrests of autoists on charges of failing to provide themselves with State licenses, failing to pay the city vehicle tax and for speeding. The police formerly insisted upon a \$50 cash bond in such cases before releasing their captive motorists and as a result the victims themselves were often caused considerable inconvenience and not infrequently had the pleasure of a night in a cell. The new ruling provides that the arrested driver shall be released at once upon the signing of a bond for \$400 and the making of an affidavit showing him to be the owner of the car or a property holder in the city.

Mayor Shanks Plans More Market Days

Indianapolis, Ind.—After investigating the city market situation for some time, Mayor Shank has decided to ask the Board of Public Safety to order the city market kept open at least a part of every day in the week except Sunday. The Mayor expects to take up the matter with the Board within the next few days. It is probable the Mayor will recommend that the market be open all day Tuesday to 7 p. m., all day Saturday to 11 p. m. and to 1 p. m. or a few hours later, on Monday, Wednesday, Thursday and Friday. The Mayor believes the Board has the right to determine when the market shall be open without action by the City Council. "At the present time," said the Mayor, "market stand holders are trying to make a living in one whole day and two half days a week. This is unfair, both to the stand holders and to the patrons of the market. It is particularly unfair to both to close the market promptly at noon on Tuesday and Thursday. I have been on the market at noon on several market days, and there were more people wanting to buy at that hour than during the market hours. However, they were not permitted to buy, because the market was closed officially. It is hard for the mother of a family to get to market before noon. Why, it is nearly noon by the time she gets the children off to school, the dishes washed and the house straightened up. Then she has to dress. As a result she frequently gets to market after it is closed. No man employed in an office or in a factory wants to go to market during the morning and buy meats and other things to keep in a hot office or factory building until he goes home in the evening. I believe a more extended market schedule would be of material benefit to everyone."

Building Code Is Approved

Niagara Falls, N. Y.—For the first time in its history the city has an official building ordinance of its own. The code approved some time ago by the council and several committees from the civic bodies has been referred to the entire board of aldermen and unanimously adopted. There are only a few minor modifications in the measure. One is the elimination of projecting verandas two feet over the lot line and another change demands that the building inspector pass upon all applications for building permits within 10 days after they are filed. The city clerk was directed to have 300 copies of the code printed for distribution at a cost not to exceed \$50. If the required number cannot be had for that amount, bids will be called for.

New London's Progressive Movement

New London, Conn.—The New London Municipal Art Society is planning for a crusade for bettering the general conditions in New London. One of the objects hoped to be attained is the formation of a social center and the securing of an experienced social settlement worker for the sole purpose of improving the condition of the poorer classes. The work of the society is varied in nature and will be in position to aid in all that is undertaken for the city's good. Health Officer Black is to head a committee on sanitation that will have in its membership a representative from every ward in the city. Already the health department of the city has this special work in charge and it is the intention of the society committee to aid the constituted authorities in the work and without dictation or antagonism. It is planned to have a systematic method of keeping the city clean and with the co-operation of the people the object can be achieved.

Condition of City Hall Grounds Improved

Lowell, Mass.—For several years prior to this year it was found to be difficult to keep these most public grounds in proper condition. The children and the dogs ran over the flower beds, and not infrequently the grounds were in an unsightly condition. This year it was decided to make a change in the treatment of the grounds, that from their nearness to the public buildings should be made and kept attractive. In pursuance of the policy of the commission that has been followed with respect to nearly all the plans for work of any distinction, the services of Olmsted Bros. were obtained to look over the ground and to prepare a plan thereof, and with it to submit a planting plan. As the result a radical change was made in the treatment of the city hall grounds that is believed to be an improvement.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities**Contracts—Construction**

City of New York vs. Palladino et al.—The proposal for a contract with the Street Cleaning Department of the City of New York, selling the privilege of appropriating refuse at the city dumps, stated that the agreed compensation was to be paid for the privilege at all the dumps and the incinerators of the department, enumerating 13 dumps and two incinerators, and the contract itself provided that bidders must satisfy themselves by personal examination of the proposed work as to the quantity and nature of the work to be done by the contractor, and the value of the privilege, and should not at any time after submitting a bid assert that there was any misunderstanding in that respect, and that no rebates or refund would be allowed under any circumstances. The defense to an action on a contractor's bond was that the city had breached its contract by reason of the damage by fire to one of the incinerators which deprived the contractor of its use and advantage. Held, that the contract estopped the contractor from claiming that there was any breach which authorized abandonment because the incinerator was out of order.

Where a contract by the Street Cleaning Department of the City of New York, selling the privilege of appropriating the refuse of the city dumps for 32 weeks at a stated price per week, and containing provisions as to advertising and reletting the contract on abandonment, was abandoned after one week's payment, and unsuccessful attempts to relet the contract were made, the department was justified in making an agreement with another contractor, without again inviting proposals, to dispose of the accumulating refuse, which was becoming a public menace, and the original contractor was liable on its bond for performance notwithstanding the failure of the city to let out the privilege on competitive bids.

A bond for \$5,000, given by a surety company for the proper performance of a contract with the City of New York for loading and trimming dock scows and other vessels of the department of street cleaning under which the contractor was to pay \$1,507.25 per week in advance for 32 weeks for the privilege of sorting and picking over and appropriating certain refuse at the city dumps, provides for a penalty, and not for liquidated damages.

Where a contractor purchased the privilege of sorting and appropriating certain of the refuse at the city dumps for a period of 32 weeks at a weekly payment of \$1,500, and the city's loss by reason of the abandonment of the contract deducting all payments and recoveries on bonds was \$27,000, the error of the trial court in treating the contractor's bond for \$5,000 as one for liquidated damages, instead of for a penalty, was harmless error.—Supreme Court of New York, 131 N. Y. S., 807.

Personal Injuries—Controlling Electricity

Finch v. City of Ottawa.—Where a city conveyed a deadly current of electricity for lighting and power purposes along a public alley, and permitted a telephone company to maintain its poles and wires on the same alley and close to the light wires and directly above them, the city would be held to have known and anticipated that the telephone wires might break and fall on or near to the light wires, that the telephone company employees would be required to examine and inspect its wires to keep them in proper condition, and that others would be on its public streets, and hence it was the city's continuing duty through its proper officers to exercise reasonable care commensurate with the dangers incident to the transmitting of such current to prevent injuries to third persons rightfully on the street or alley by the escape of electricity. Where plaintiff, a telephone lineman, was injured by an electric current escaping from the city's electric light wires through a telephone wire into his body, the burden was on him in order to recover from the city to show that he received the injury by means of a current of electricity, and that the current escaped from the control of defendant city by reason of its neglect.—United States Circuit Court of Appeals, 109 F. R., 301.

Officers—Compensation—Actions to Recover

Bovaird v. City of Bradford.—In assumption by the treasurer of a city of the third class against the city for the salary of a clerk under a city ordinance giving the clerk to the city treasurer an annual salary of \$720, which ordinance was repealed after the treasurer's election, the claim being based on Act May 23, 1889, providing that no ordinance shall be passed increasing or diminishing the salary of any officer after his election or appointment, a verdict is properly directed for defendant where no attempt was made to show that any clerk was appointed by the treasurer or city council; testimony that a certain person had acted as clerk being entirely insufficient to raise an issue of fact. The fact that a city treasurer's failure to appoint a clerk, as authorized by ordinance, cast upon the treasurer heavier burdens, did not authorize him to recover the salary of the clerk.—Supreme Court of Pennsylvania, 81 A. R., 720.

Closing Streets—Public Use

Mayor and City Council of City of Baltimore et al. v. Brengle et al.—The topographical map of the Annex portion of Baltimore city showing the streets as they were to be laid out and straightened, etc., by the Annex Commission of Baltimore City, showed the streets laid out at right angles, but M avenue, which is not adopted as one of the streets, runs diagonally across a square formed by W avenue on the north, P avenue on the south, E street, formerly Tenth street, on the east, and H street, formerly Eleventh street, on the west, and crosses E street, and cuts off a strip at the corner of W avenue and E streets. N avenue runs parallel with and is a square beyond W avenue. Before closing M avenue the Annex Commissioners purchased as a public highway that part of the bed of Eleventh street from the south side of N avenue to the north side of M avenue, and had Eleventh street, which is wider than M avenue, graded and macadamized. Held, that the closing of M avenue was under the circumstances for a public use, even though a few owners would be benefited thereby by having the exclusive use of the bed of such avenue after it was closed. A street cannot be closed even for a public use without making just compensation to abutting property owners entitled thereto.—Court of Appeals of Maryland, 81 A. R., 677.

Water Supply—Increase of Rates—Injunction

Atticks et al. v. Riverton Consolidated Water Co.—A bill to restrain a water company from making a new scale of rates, as unreasonable and discriminating and because a violation of a contract made by the borough with the party under whom it claims, is properly dismissed, where there is no evidence to show extortion, or that there has been a violation of contract.—Supreme Court of Pennsylvania, 81 A. R., 707.

City Employees—Veteran Fireman Discharged

Cottam v. City of New York.—While the civil service law gives veteran firemen the right to a hearing before removal, such a fireman may be dismissed on completion of the work which he was engaged to do; and it is not necessary to discharge other competent employees to make room for such veteran when the work is done, or when the funds available for his wages have been exhausted. Laborers whose wages are payable per diem are not entitled to recover from the city for wrongful discharge or lay-off.—New York Supreme Court, 131 N. Y. S., 677.

Defective Streets—Gutter Bridge

Hays v. City of Columbia.—Plaintiff, in an action against a city for personal injuries, who alleges that defendant "negligently and carelessly failed to provide a fastening" by which to prevent the platform over a gutter from slipping to the pavement, thereby rendering it unsafe to the traveling public, has the burden of proving that his injury was caused by defendant's omission to fasten the platform as pleaded, and that such omission was a breach of some ministerial duty owed by defendant to pedestrians using that platform. For injuries resulting from a danger inherent in the plans adopted by a city for certain work it is not liable, but for injuries resulting from the negligent construction of a work according to such plans it is liable; and a city's use for over 15 years of platforms over gutters without fastening them down is a defect inherent in the plans of such platforms, for which it is not liable.—Kansas City Court of Appeals, 141 S. W. R., 3.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS

Good Roads and the Farmer. Paper read before American Association for Highway Improvements. By W. W. Findley. 2½ pp., Southern Good Roads, December. 10 cts.

Good Roads as They Affect Villages and Small Towns. Paper before Union of Saskatchewan Municipalities. 2 pp., Western Municipal News, December. 10 cts.

Road Improvement in South Carolina. Paper before South Carolina Good Roads Association. By F. H. Hyatt. 2 pp., Southern Good Roads, December. 10 cts.

Roads of King County, Washington. Paper before Good Roads Association of Washington. By J. R. Morrison. 6 pp., Pacific Municipalities, Nov. 30. 20 cts.

The Delaware Highway. Paper before American Association for Highway Improvements. By T. Coleman Du Pont. 3½ pp., Southern Good Roads, December. 10 cts.

Cost and Maintenance of a Lincoln Memorial Road to Gettysburg. Report by Glenn Brown. 2 pp., Quarterly Bulletin American Institute of Architects, October.

Grade Crossing Elimination Work on Long Island. Illustrated, 4½ pp., Good Roads, January. 10 cts.

Work of the United States Office of Public Roads During 1911. 1 p., Good Roads, January. 10 cts.

Financing Road Improvements. Paper before Southern Appalachian Good Roads Association. By L. E. Boykin. 2½ pp., Good Roads, January. 10 cts.

Federal Aid for Highway Improvements. ½ p., Engineering News, Dec. 28. 15 cts.

Survey Work for New York State Highways. Notes on. 2-3 pp., Engineering & Contracting, Dec. 27. 10 cts.

Making a Reconnaissance for the Meridian Road, South Dakota. By S. H. Lea, State Highway Engineer. Illustrated, 1 p., Engineering & Contracting, Dec. 20. 10 cts.

Construction, Some of the Problems of Road. Paper before American Road Builders' Association. By W. W. Crosby. 2 pp., Contractor, Dec. 15. 20 cts.

Notes on Road Rolling. From annual report of W. A. McLean. ¾ p., Engineering & Contracting, Dec. 13. 10 cts.

Cost of Maintaining Road Rollers. ½ p., Municipal Journal, Dec. 21. 10 cts.

Culverts, Corrugated Metal. Paper before League of California Municipalities. By C. P. Jensen, Fresno. Illustrated, 5 pp., Pacific Municipalities, Nov. 30. 10 cts.

Contractors' Criticisms of Road Contracts. Paper before American Road Builders' Association. By C. A. Crane. 3 pp., Bulletin of the General Contractors' Association, December.

Relations of Engineers and Contractors, with Particular Reference to Road Work. From paper before First American Road Congress. By D. L. Hough. 3 pp., Engineering & Contracting, Dec. 13. 10 cts.

Sand-Clay Road Construction in Virginia, Earth and. Paper before American Association for Highway Improvements. By P. St. J. Wilson. 1 p., Engineering & Contracting, Dec. 27. 10 cts.

Shell Roads. Paper before American Association for the Advancement of Science. By W. W. Crosby. Illustrated, 3 pp., Engineering & Contracting, Jan. 3. 10 cts.

Tar-Concrete Paving in Ontario Cities. By W. A. McLean. 4 pp., Contract Record, Jan. 2. 20 cts.

Use of Tar on Road Surfaces. Growing Complaints by Horse Owners. 1 p., Surveyor, Dec. 1. 40 cts.

History of Tar-Concrete Pavements in Ontario. Paper before American Association for the Advancement of Science. By W. A. McLean, provincial engineer of highways of Ontario. 2 pp., Engineering & Contracting, Jan. 3. 10 cts.

Asphalt Macadam Construction at Carlisle, Pa. By C. A. Bingham, city engineer. 1½ pp., Engineering & Contracting, Dec. 20. 10 cts.

Heavy Asphaltic Road Oils. By E. N. Percy. 6 pp., Pacific Municipalities, Nov. 30. 20 cts.

Experiences in Essex County, N. J., in Road Resurfacing with Asphalt Oil. From paper before American Road Builders' Association. By James Owen. ½ p., Engineering & Contracting, Dec. 13. 10 cts.

Road Costs and Maintenance. Paper before American Association for Highway Improvements. By A. H. Blanchard. 2 pp., Canadian Engineer, Dec. 14. 15 cts.

Testing Road Stone and Bituminous Materials, Methods Employed by the New York State Highway Department in. 2 pp., Engineering & Contracting, Dec. 20. 10 cts.

Convention of the League of California Municipalities. 9 pp., Pacific Municipalities, Nov. 30. 20 cts.

Report of the American Good Roads Congress and Eighth Annual Convention of the American Road Builders' Association. 66 pp., Good Roads, Dec. 2. 10 cts.

First Convention and Congress of the American Association for Highway Improvements. 4½ pp., Good Roads, December. 10 cts.

Hazards of Our Roads and Streets. ½ p., Engineering Record, Dec. 9. 10 cts.

Pavements, Notes on Foreign. Unusual features in German specifications; fifteen years' maintenance. By Robt. J. Harding, Supt. of Public Works. Illustrated, 2 pp., Municipal Journal, Dec. 14. 10 cts.

Considerations Affecting the Selection of Types of Pavements Best Adapted for Use Upon a Given Street. 3 pp., Engineering & Contracting, Dec. 20. 10 cts.

Street Details in Germany. By Robt. J. Harding, Supt. Public Works. Illustrated, ¾ p., Municipal Journal, Dec. 21. 10 cts.

Foundations, Stone Block Pavement for. Communication from G. C. Warren. ½ p., Municipal Journal, Jan. 4. 10 cts.

Macadam for Future Foundation. Communication from Geo. R. Gyger. ½ p., Municipal Journal, Dec. 28. 10 cts.

Macadam for Future Pavement Foundation. ¼ p., Municipal Journal, Dec. 14. 10 cts.

Asphalt Paving in Chicago, Repairing. 1 p., Engineering News, Jan. 4. 15 cts.

Wood Block Pavements in Chicago. 2-3 p., Engineering Record, Jan. 6. 10 cts.

Creosoting Paving Blocks. Report of city engineer on A. S. P. Specifications. 2 pp., Municipal Journal, Jan. 4. 10 cts.

Brick Pavement, Natural Base. Illustrated, 1½ pp., Brick, Dec. 15. 10 cts.

Concrete Pavement at Plymouth, Reinforced. Illustrated, ½ p., Engineering Record, Dec. 23. 10 cts.

Novel Reinforced Concrete Pavement. Woven wire reinforcement, cypress strips used for expansion joints, surface finish of crushed granite chips spread on a smooth sidewalk finish; methods and cost of construction. Illustrated, 2½ pp., Municipal Journal, Dec. 28. 10 cts.

Cement Concrete Roads. From annual report on highway improvement, Ontario, 1911. Illustrated, 1 p., Canadian Engineer, Dec. 7. 15 cts.

Glass Paving Blocks. ¼ p., Municipal Journal, Jan. 4. 10 cts.

Pavement Cuts and House Connections. Communication from S. Whinery. ½ p., Municipal Journal, Dec. 21. 10 cts.

Maintenance in Newark, Street. ½ p., Municipal Journal, Jan. 4. 10 cts.

Street Maintenance in Cape Town. By W. J. Jeffries, city engineer. 1½ pp., Surveyor, Dec. 1. 40 cts.

Sidewalks in Germany. Materials adapted to use; small cut stone slabs, diagonal concrete blocks, asphalt, mosaic of different colored stones. By Robt. J. Harding, Supt. Public Works. Illustrated, 1 p., Municipal Journal, Dec. 28. 10 cts.

Concrete Sidewalks. By S. B. Code. 1½ pp., Canadian Engineer, Jan. 4. 15 cts.

Curb Stone, Setting Curved. By J. A. Cole. Illustrated, ¾ p., Municipal Journal, Dec. 21. 10 cts.

SEWERAGE AND SANITATION

Engineering Procedure in the Brooklyn Bureau of Sewers. Paper before Brooklyn Engineers' Club. By J. B. Van Vleck. 1½ pp., Engineering & Contracting, Jan. 3. 10 cts.

Bureau of Sewers, Manhattan Borough, New York. Increasing the efficiency of a municipal public works organization. 2 pp., Engineering Record, Dec. 9. 10 cts.

Construction of a Deep Sewer of Brick and Concrete Lined Cast Iron for the London County Council, England. By R. M. Gloyne. ¾ p., Engineering News, Dec. 14. 15 cts.

Sewer Laying in Wet Trench. Illustrated, ¼ p., Municipal Journal, Jan. 4. 10 cts.

Vitrified Clay in Sewer Construction. By G. H. Tefft. 2 pp., Contract Record, Dec. 13. 20 cts.

Repairing a Leaky Wrought Iron Sewer Pipe, Unique Method of. By Fred'k. Latourrette. Illustrated, ¾ p., Engineering News, Dec. 21. 15 cts.

Infiltration into Sewers in Various Cities, Amount of Ground Water. Methods of waterproofing. Topical discussion before American Association of Cement Users. 1½ pp., Engineering & Contracting, Dec. 27. 10 cts.

Sewerage Notes, Prescott. ½ p., Municipal Journal, Jan. 4. 10 cts.

Sewer Standards in American Cities. Illustrated, 2 pp., Engineering & Contracting, Dec. 27. 10 cts.

Calumet Sag Channel of the Sanitary District of Chicago. Illustrated, 2½ pp., Engineering and Contracting, Dec. 27. 10 cts.

Cleaning in Chicago, Sewer and Catch Basin. ½ p., Municipal Journal, Dec. 14. 10 cts.

Pump, Newport Sewage. Illustrated, ½ p., Municipal Journal, Dec. 21. 10 cts.

Sewage Disposal for Chicago. ½ p., Municipal Journal, Dec. 14. 10 cts.

Observations on the Principles of Sewage Purification. Paper before Association of Managers of Sewage Disposal Works. By W. O. Travis. 2 pp., Surveyor, Dec. 1. 40 cts.

Royal Commission on Sewage Disposal. Seventh Report. Review by H. C. H. Shenton and W. C. Easdale. 2 pp., Surveyor, Dec. 1. 40 cts.

Operating Results of the Columbus Sewage Works. From report by C. B. Hoover, chemist in charge. 1 p., Engineering Record, Jan. 6. 10 cts.

Baltimore Sewage Treatment Plants. The largest of its kind in the world; settling and sludge digesting tanks, sprinkling filters; head of effluent used for power; smaller plant operated for a year. Illustrated, 2½ pp., Municipal Journal, Dec. 14. 10 cts.

Madison, N. J., Sewage Purification. ¼ p., Municipal Journal, Jan. 4. 10 cts.

Methods and Cost of Purifying Sewage in the State of Ohio. By R. Winthrop Pratt. 3 pp., Engineering & Contracting, Dec. 13. 10 cts.

Installing a Small Sewage Disposal Plant. By H. N. Ogden. Illustrated, 2 pp., House and Garden, January. 25 cts.

Relation of the Putrescibility of the Settling and Non-Settling Suspended Matter in Sewage. Paper before American Public Health Association. By Arthur Lederer. 1½ pp., Engineering Record, Dec. 23. 10 cts.

Engineering Problems Connected with Biological Sewage Treatment. Paper before Canadian Public Health Association. By T. A. Murray. 4½ pp., Canadian Engineer, Dec. 14. 15 cts.

Discussion of Engineering Problems Connected with Biological Sewage Disposal. Before Canadian Health Association. Illustrated, 3 pp., Canadian Engineer, Dec. 28. 15 cts.

Odors, Sewage Bacteria and. By Geo. W. Fuller. 3 pp., Engineering News, Jan. 4. 15 cts.

Sprinkling Filter at Reading, New. By E. S. Chase. Illustrated, 1½ pp., Engineering Record, Dec. 30. 10 cts.

Notes on the Theory and Practice of Percolating Filters. Paper before Association of Managers of Sewage Disposal Works. By J. E. Farmer. 1 p., Canadian Engineer, Jan. 4. 15 cts.

Imhoff Tank Results at Three German Installations. Effect of temperature, removal of suspended solids, putrescibility of effluent. 1 p., Municipal Journal, Jan. 4. 10 cts.

Electrolytic Sewage Treatment at Oklahoma City. By H. V. Hickley. Illustrated, 2½ pp., Engineering & Contracting, Dec. 20. 10 cts.

Clarification and Sewage Treatment in Germany. Recent Methods of Sewage. By E. Kuichling. 2 pp., Engineering News, Dec. 28. 15 cts.

Sewage Treatment at Dresden. Use of fine mesh screens, without other treatment; effluent pumped during high water. Illustrated, 2 pp., Municipal Journal, Dec. 28. 10 cts.

Pollution of Rivers and Waterways. Meeting of the National Association for Preventing the. 1½ pp., Engineering News, Dec. 21. 15 cts.

The Problem of the Great Lakes. Illustrated, 4 pp., Canadian Engineer, Dec. 28. 15 cts.

Uses of the Great Lakes. By G. S. Williams. 1 p., Engineering News, Dec. 14. 15 cts.

Health Department, Chicago's; Its Activities and Needs. By Sherman Kingsley. 10 pp., City Club Bulletin, Dec. 20.

Ordinances, Rules and Regulations Pertaining to Public Health, Municipal. 11 pp., Public Health Reports, Dec. 22; 9 pp., Dec. 15; 9 pp., Dec. 8.

Typhoid Fever, Contact Infection in. By F. G. Boudreau. 5 pp., Bulletin, Ohio State Board of Health, November.

How Shall We Deal with Typhoid Carriers? By J. H. Landis. 5 pp., Bulletin, Ohio State Board of Health, November.

Milk Supplies, Problem of City. By Dr. P. G. Heineman. 14 pp., Popular Science Monthly, January. 30 cts.

Drinking Cup, Should the Common in Public Places Be Abolished? By C. J. Spence. 2 pp., Bulletin, Ohio State Board of Health, November.

WATER SUPPLY

Water Supply for Norway, Mich. By L. R. Howson. Illustrated, 3 pp., Engineering & Contracting, Dec. 13. 10 cts.

New Water Works for Skegness. Paper before Institution of Water Engineers. By Percy Griffith. Illustrated, 6 pp., Surveyor, Dec. 22. 40 cts.

Construction of Ensley Water System. By G. C. Scherer. Illustrated, 2 pp., Contractor, Dec. 1. 20 cts.

Lawton to Increase Its Water Works. By J. W. Perry. 1 p., Fire and Water, Dec. 13. 10 cts.

The Chapel Water and Electrical Works, China. Illustrated, 2 pp., Far Eastern Review, October. 25 cts.

Water System of District of Columbia. 1 p., Fire and Water, Dec. 20. 10 cts.

New Water System for Charleston, S. C. 2 pp., Fire and Water, Dec. 27. 10 cts.

Story of Pittsburgh Water Supply. By L. C. Macpherson. 1½ pp., Fire and Water, Dec. 20. 10 cts.

Aqueduct, Construction of the Los Angeles. Excavating and concreting in desert land. Illustrated, 2 pp., Engineering Record, Jan. 6. 10 cts.

Location and Design of Conduits on the Los Angeles Aqueduct. Illustrated, 1½ pp., Engineering Record, Dec. 16. 10 cts.

Los Angeles Aqueduct Siphon. Steel pipe supported on concrete piers; work done by city employees; handling materials, speed and cost. By Burt A. Heinly. Illustrated, 1 p., Municipal Journal, Jan. 4. 10 cts.

Studies in Economics of Design for the Under-City Tunnel of the Catskill Aqueduct. Illustrated, 5 pp., Engineering & Contracting, Dec. 20. 10 cts.

General Features of Bull Run Conduit No. 2, Portland, Ore., Water Supply. By D. D. Clarke. ½ p., Engineering News, Dec. 7. 15 cts.

Tunnel, Grouting the Concrete Lining of the Rondout Pressure. By H. L. Weinstein. Illustrated, 3 pp., Engineering Record, Dec. 30. 10 cts.

Test of Watertightness of Concrete Tunnel Lining Under High Head. By C. R. Hulsart. Illustrated, 2½ pp., Engineering News, Dec. 14. 15 cts.

Pipe Diameters, A New Method for Determining Economical. By F. H. Carter. Illustrated, 1½ pp., Engineering Record, Dec. 16. 10 cts.

Double Municipal Water Supplies. Abstract of paper before New England Water Works Association. By Prof. W. T. Sedgwick and H. P. Letton. 1 pp., Municipal Journal, Jan. 4. 10 cts.

Services, Unused Water. ½ p., Municipal Journal, Dec. 28. 10 cts.

Life of Wrought Iron and Steel Service Pipes. Discussion before New England Water Works Association. ¾ p., Engineering News, Dec. 21. 15 cts.

Dams and Reservoirs, State Supervision of. By F. P. McKibben. 1½ pp., Engineering Record, Dec. 16. 10 cts.

Action by the Engineers' Club of Philadelphia on State Control of Dams and a State Department of Public Works. ¾ p., Engineering News, Dec. 14. 15 cts.

State Control of the Design and Construction of Dams and Reservoirs. By Farley Gannett, engineer, Penn. Water Supply System. 4 pp., Engineering Record, Jan. 6. 10 cts.

A Forty-Foot Earth Dam at Dallas, Tex. By Eugene Couch. Illustrated, 1½ pp., Engineering Record, Dec. 23. 10 cts.

Flow of Water in Wood Stave Pipe, Experiments on the. Discussion. 16 pp., Proceedings of the American Society of Civil Engineers, December. \$1.

Measuring the Flow of Water Over Circular Weirs. 1 p., Engineering Record, Dec. 16. 10 cts.

Pumps, Tests of Centrifugal. 2½ pp., Canadian Engineer, Dec. 21. 15 cts.

Report of a Duty Trial on the Six Million Gallon Pumping Engine at the High Level Pumping Station of the Toronto Water Works. 4 pp., Canadian Engineer, Dec. 14. 15 cts.

The Hydraulic Ram—Its Possibilities of Development and Use. Paper before Pacific Northwest Society of Engineers. By S. B. Hill. Illustrated, 3 pp., Engineering & Contracting, Jan. 3. 10 cts.

The Wilmette Pumping Station. Unique Design of an Electrical Pumping Plant. Illustrated, 3 pp., Electrical Review, Dec. 23. 10 cts.

Water Waste in Chicago. Sources of. Results of waste prevention efforts. 1½ pp., Engineering & Contracting, Dec. 27. 10 cts.

Survey to Detect Water Waste in Milwaukee. ¾ p., Engineering Record, Jan. 6. 10 cts.

Prevention of Water Waste in Washington. 1 p., Engineering Report, Dec. 30. 10 cts.

Water Famine, Milwaukee to Guard Against. By J. E. Moriarity. 1 p., Fire and Water, Dec. 6. 10 cts.

Water Meter Opinion of the New Jersey Board of Public Utility. First. ½ p., Engineering Record, Dec. 9. 10 cts.

Plea for Measured Charges for Water and Other Public Utility Services. Discussion by Rudolph Hering of paper by Geo. C. Earl before American Water Works Association. ½ p., Engineering News, Dec. 28. 15 cts.

Rates, Municipal Water Plants Raise. Conditions at Chicago, Baltimore and Washington. 1½ pp., Public Service, December. 20 cts.

Water Areas and Statistics Committee. Report of, to Institution of Water Engineers. 3 pp., Surveyor, Dec. 15. 40 cts.

Purification Plants, Operation of Water. From report of Chief of the Bureau of Filtration, Philadelphia. 3 pp., Canadian Engineer, Dec. 21. 15 cts.

Automatic Regulating Devices for Water Purification Plant. 3½ pp., Chemical Engineer, December. 25 cts.

Marseilles Experiments for the Purification of Water. Communication from P. A. Maignen. 1 p., Engineering Record, Dec. 9. 10 cts.

Studies of Special Methods of Water Purification. From annual report of Massachusetts State Board of Health. 1½ pp., Engineering Record, Dec. 30. 10 cts.

Filter Plant, Operation of the Rock Island. Illustrated, 1½ pp., Engineering Record, Dec. 9. 10 cts.

Ozone Water Purification Plant at St. Petersburg, Russia. ½ p., Engineering News, Dec. 28. 15 cts.

Sterilization Plant for a Municipal Water Supply. Canadian. Methods and results at Strathcona, Alt. 1½ pp., Engineering Record, Dec. 9. 10 cts.

Softening and Purification Plant at Georgetown, Ky., Municipal Water. By J. K. Hoskins. Illustrated, 2 pp., Engineering Record, Dec. 16. 10 cts.

Notes, Reading, Pa., Water Works. Illustrated, ¾ p., Municipal Journal, Dec. 21. 10 cts.

STREET LIGHTING & POWER PLANTS

Display Lighting in Two Cities. Gas arcs in Manchester, N. H., and inverted luminous arcs in New Haven, Conn. Illustrated, 1½ pp., Municipal Journal, Jan. 4. 10 cts.

Tungsten Lamp in the Lighting of Roadways. ¾ p., Electric Review, Dec. 30. 10 cts.

Illuminating Engineering and Its Application to the Gas Industry. Paper before National Commercial Gas Association. By E. L. Elliott. 3 pp., Progressive Age, Dec. 1. 20 cts.

Gas and Hygiene. Translated from Journal fur Gasbeleuchtung. By E. Othmer. 2 pp., Progressive Age, Jan. 1. 20 cts.

Progress of Gas Power in 1911. Annual address of R. H. Fernald, President American Society of Mechanical Engineers. 2 pp., Engineering News, Jan. 4. 15 cts.

Leakage in Unaccounted for Gas, Actual. Paper before American Gas Institute. By J. D. von Maur. 4½ pp., American Gas Light Journal, December. 10 cts.

Cost, Gas at Less Than. Experience at Holland, Mich. By H. J. Gonden. 2 pp., Public Service, December. 20 cts.

Comparative Costs and Efficiency of Gas, Electric and Gasoline Lighting. By M. W. Blink. Paper before National Commercial Gas Association. 3½ pp., Progressive Age, Dec. 15. 20 cts.

Where Current is Sold for 2½ Cents.—San Francisco. Illustrated, 2½ pp., Power, Dec. 5. 5 cts.

Electrolysis in Underground Pipes, Insulation as a Means of Minimizing. Paper before American Gas Institute. By E. B. Rosa and Burton McCollum. Illustrated, 2 pp., American Gas Light Journal, Jan. 1. 10 cts.

Findings of the Investigators of Electrolysis in the Underground Metal Structures in Chicago. Illustrated, 1 p., Engineering & Contracting, Dec. 13. 10 cts.

Power Plants, Gas. By R. L. Streater. Illustrated, 22 pp., Engineering Magazine, December. 25 cts.

Chimneys, Design of Tall. Paper before Society of Engineers. By Henry Adams. 7 pp., Surveyor, Dec. 1. 40 cts.

Boiler, Test of World's Largest. 2 pp., Power, Dec. 5. 5 cts.

Engines, Efficiency of Reciprocating. 4 pp., Power, Dec. 26. 5 cts.

Status of the Small Steam Turbine. By W. J. A. London. 2 pp., Power, Jan. 2. 5 cts.

Coal in Storage, Deterioration and Spontaneous Heating of. Paper before Society of Chemical Industry. By H. C. Porter and F. K. Ovtz. 1½ pp., Engineering Record, Dec. 23. 10 cts.

Plea for the Revision of the Rules of the American Chemical Society Governing the Approximate Analyses of Coal. By M. R. Campbell. 2 pp., Chemical Engineer, December. 25 cts.

Deterioration of Coal in Storage. By H. C. Porter and F. K. Ovtz. 2 pp., Power, Jan. 2. 5 cts.

FIRE AND POLICE

Fire Prevention and Its Effect Upon Credit. Paper before Fire Prevention Congress of St. Paul. By H. W. Parker. 1 p., Fire and Water, Dec. 6. 10 cts.

Practical Fire Prevention. By E. O. Torbohn. 6 pp., Insurance Engineering, December. 25 cts.

Combustible Materials, Office Buildings Menace of. 4½ pp., Insurance Engineering, December. 25 cts.

Fire Conditions, Detroit Water and. 2 pp., Fire and Water, Dec. 20. 10 cts.

Newton Deficient in Firemen and Apparatus. 1½ pp., Fire and Water, Dec. 27. 10 cts.

Wichita Viewed by Fire Underwriter Engineers. 2 pp., Fire and Water, Dec. 6. 10 cts.

Boston Fire District. Paper before Massachusetts Firemen's Association. By Chief John A. Mullin. 2 pp., Insurance Engineering, December. 25 cts.

Department, Augusta, Ga., Fire. 1 p., Fire and Water, Dec. 13. 10 cts.

Fire Alarm Boxes, Conspicuous. Illustrated, ¼ p., Municipal Journal, Dec. 14. 10 cts.

Policemen as Rough Riders. Illustrated, ¼ p., Municipal Journal, Dec. 28. 10 cts.

Criminal Identification in Oklahoma. ¼ p., Municipal Journal, Jan. 4. 10 cts.

Apprehension of Offenders Guilty of Serious Crimes. Paper before Chief Constables' Association of Canada. By

Inspector McClelland, of Toronto. 1½ pp., Canadian Municipal Journal, December. 15 cts.

Life Saving Station, Municipal. Illustrated, ¼ p., Municipal Journal, Dec. 28. 10 cts.

GOVERNMENT AND FINANCE

Initiative, Referendum and Recall. By Jonathan Bourne, Jr. 9 pp., Atlantic Monthly, January. 35 cts.

Municipal Franchises Under Amendment to Constitution. Paper before League of California Municipalities. By P. V. Long. 3 pp., Pacific Municipalities, Nov. 30. 20 cts.

City Should Always Control. Address of D. F. Wilcox on the Union Passenger Station Franchise. 1 p., Citizens' Bulletin, Cincinnati, Dec. 23.

Municipal Trading Relieves Rates. New returns by the borough treasurer of Preston. 2 pp., Municipal Journal (London), Dec. 19. 15 cts.

Public Utilities, Decapitalization of. By D. F. Wilcox. 5 pp., City Club Bulletin, Chicago, Dec. 16.

Corporation Baiting in Denver. By W. F. Brashears. Illustrated, 4 pp., Public Service, December. 20 cts.

City Loses in Des Moines Water Case. 2 pp., Public Service, December. 20 cts.

Civil Service Reform. Address of Chas. J. Bonaparte before National Civil Service Reform League. 1 p., Citizens' Bulletin, Cincinnati, Dec. 23.

New York and the Merit System. Paper before National Reform League. By James Creelman, President of the Municipal Service Commission. 1 p., The Citizens' Bulletin, Cincinnati, Dec. 30. 5 cts.

City Engineers and Civic Mismanagement. 1½ pp., Contract Record, Dec. 27. 20 cts.

Taxation, Municipal. Paper before Union of New Brunswick Municipalities. By H. H. Stuart. 2 pp., Canadian Municipal Journal, December. 15 cts.

German Imperial Tax on the Unearned Increment. By R. C. Brooks. 1 p., City Life, Dec. 14. 5 cts. 1 p., Dec. 21. 5 cts.

Waste and Corruption, Anti-Toxin for Municipal. Paper before National Municipal League. By Richard H. Dana. 1 p., City Life, Dec. 14. 5 cts.

Accounting and Efficiency, Municipal. By H. R. Sands. 2½ pp., Contract Record, Jan. 2. 20 cts.

STREET CLEANING AND REFUSE DISPOSAL

Street Cleaning Accounts. Brief reply to J. T. Fetherston's discussion of street cleaning accounts; independent versus comparative standards. By Ernst C. Meyer. ¾ p., Municipal Journal, Dec. 14. 10 cts.

Street Cleaning Methods and Costs at Washington, D. C. 1 p., Engineering & Contracting, Dec. 20. 10 cts.

Leaves, Collecting Fallen. ½ p., Municipal Journal, Dec. 14. 10 cts.

Garbage Reduction, Cost of. 2 pp., Canadian Engineer, Jan. 4. 15 cts.

Operative Results of the Garbage-Reduction Work at Cleveland and Columbus, O. 2 pp., Engineering Record, Dec. 9. 10 cts.

Power from Garbage in Europe. ¼ p., Municipal Journal, Jan. 4. 10 cts.

Refuse Disposal at Toronto. Report of Methods of. 1½ pp., Engineering Record, Dec. 23. 10 cts.

STRUCTURES AND MATERIALS

Cement, Uniform Specifications for. 3½ pp., Cement, November. 25 cts.

Annual Meeting of the German Portland Cement Manufacturers. Summary by R. W. Leslie and E. L. Conwell. 4 pp., Cement Age, December. 15 cts.

Production and Testing of Portland Cement. Paper before German Cement Manufacturers' Association. By Dr. Otto Schott. 2 pp., Cement Age, December. 15 cts.

Rapid Analyses of Cement. From Journal of Industrial and Engineering Chemistry. By C. N. Wiley and W. A. Ernst. 2½ pp., Cement, November. 25 cts.

Portland Cement on Public Works. Paper before Institution of Water Engineers. By G. T. Edwards. 4½ pp., Surveyor, Dec. 15. 40 cts.

Concrete, Selection and Proportion of Aggregates for. 2½ pp., Canadian Engineer, Dec. 14. 15 cts.

Architectural Treatment of Concrete Structures. By M. M. Sloan. 10 pp., Cement, November. 25 cts.

Timber Beams, Rapid Destruction of, from Dry Rot. Illustrated, 2½ pp., Engineering News, Dec. 14. 15 cts.

Retaining Walls, Steel Sheet Pile. By M. H. Lewis. Illustrated, 2 pp., Engineering News, Jan. 4. 15 cts.

Bridges, Highway. Paper before First American Road Congress. By A. N. Johnson. 2 pp., Engineering Record, Dec. 9. 10 cts.

Reinforced Concrete Bridge. From transactions Inst. C. E., Ireland. By J. H. de W. Waller. Illustrated, 3½ pp., Canadian Engineer, Dec. 21. 15 cts.

Open Caisson Foundations of the Newark Turnpike Bridge. Illustrated, 1½ pp., Engineering Record, Dec. 16. 10 cts.

Specifications for the Design of Bridges and Subways. Paper before American Society of Civil Engineers. By H. C. Seeman. Illustrated, 39 pp., Proceedings of the American Society of Civil Engineers, December. \$1.

Some Observations on the Erection of Small Steel Highway Bridges. By M. D. Garver. Illustrated, 1½ pp., Engineering Record, Dec. 23. 10 cts.

A Reinforced Concrete Through Girder Bridge. By P. A. Shaw. Illustrated, ½ p., Engineering Record, Dec. 23. 10 cts.

Erecting Superstructure of St. Louis Municipal Bridge. By S. W. Bowen, resident engineer. Illustrated, 7 pp., Engineering & Contracting, Dec. 13. 10 cts.

Spokane Concrete Arch Bridge. Main span two hundred and eighty-one feet; false work, erected without posts in the river, destroyed by wind; new false work supported by steel girders. Illustrated, 2 pp., Municipal Journal, Dec. 21. 10 cts.

Through Reinforced Concrete Arch Bridge at Lockland, Ohio. By F. B. Ayer. Illustrated, ½ p., Engineering Record, Dec. 16. 10 cts.

Operating Mechanism of the Bascule Span of the Passyunk Avenue Bridge. Illustrated, 1½ pp., Engineering Record, Jan. 6. 10 cts.

Reinforced Concrete Arch Bridge Designed with Cantilever Ribs. Illustrated, 1 p., Engineering Record, Dec. 30. 10 cts.

Pier, Latest Municipal, at Philadelphia. Illustrated, 1½ pp., Engineering Record, Jan. 6. 10 cts.

Beams, Economical Design of Reinforced Concrete. Paper before Utah Society of Engineers. By R. B. Ketchum. Illustrated, 17 pp., Journal Association of Engineering Societies, December. 30 cts.

Trusses, Reinforced Concrete. By Ernest McCullough. 3 pp., Engineering News, Jan. 4. 15 cts.

MISCELLANEOUS

Cost Data in Municipal Reports. ¾ p., Municipal Journal, Dec. 14. 10 cts.

Unit Times and Cost Keeping in Construction Work. From "Concrete Costs." By W. F. Taylor and S. E. Thompson. 1 p., Concrete, December. 15 cts.

Difficulties of Recording Construction Costs by Usual Methods. From "Concrete Costs." By F. W. Taylor and S. E. Thompson. 1 p., Canadian Engineer, Jan. 4. 15 cts.

Expense Burden: Its Incidence and Distribution. Paper before American Society of Mechanical Engineers. By S. H. Bunnell. 3 pp., Engineering & Contracting, Dec. 27. 10 cts.

Contracts and Specifications, View of City. Paper before Municipal Engineers of the City of New York. By C. A. Crane. 3 pp., Contractor, Dec. 1. 20 cts.

Proposed Law to Prevent Collusion and Graft in the Letting of Public Contracts. Paper before American Society of Engineering Contractors. By C. E. Gillette. 1 p., Engineering News, Dec. 21. 15 cts.

Contractors and Engineers. Paper before National Good Roads Congress. By Capt. D. L. Hough. 4½ pp., Bulletin of the General Contractors' Association, December.

Engineers and Contractors. Communication from R. G. Dieck. 1 p., Engineering Record, Dec. 30. 10 cts.

Relation Between Engineers and Contractors on Highway Work. Paper before First American Road Congress. By Onward Bates. 2 pp., Engineering Record, Dec. 9. 10 cts. 1½ pp., Engineering & Contracting, Dec. 20. 10 cts.

Engineers' Fees for Protracted Work. Communication from W. K. Palmer. ½ p., Municipal Journal, Dec. 14. 10 cts.

Legal Compensation for Engineers Engaged on Public Works in Indiana. By E. E. Watts. ½ pp., Engineering News, Dec. 14. 15 cts.

Changing City Engineers. ½ p., Municipal Journal, Jan. 4. 10 cts.

Engineers' Work in Grading Landscape Areas. By J. M. Amber. 1½ pp., Engineering News, Dec. 7. 15 cts.

Engineering Education at the University of Wisconsin. Paper before Engineers Club, Toronto. By A. G. Christy. 1½ pp., Canadian Engineer, Dec. 7. 15 cts.

Town Planning and Housing. Proposed New Bill. 1 p., Municipal Journal (London), Dec. 16. 15 cts.

Jersey City Plan Commission. ¼ p., Municipal Journal, Dec. 21. 10 cts.

Housing and Town Planning Progress. Monthly Record of the National Housing and Town Planning Congress. 1 p., Municipal Journal (London), Dec. 9. 15 cts.

Park System, Niagara Boulevard Division of Queen Victoria. By J. H. Jackson. Illustrated, 3 pp., Canadian Engineer, Dec. 7. 15 cts.

Bath House, Unique Public. Illustrated, ¾ p., Municipal Journal, Dec. 28. 10 cts.

Improvement Districts for Municipal Co-operation. ¼ p., Municipal Journal, Dec. 21. 10 cts.

Bench Marks, Chicago. Illustrated, ½ p., Municipal Journal, Dec. 21. 10 cts.

Quarry, City Owned. ½ p., Municipal Journal, Dec. 21. 10 cts.

Municipal Work in 1911 and 1912. Estimate of work done and to be done, and of apparatus purchased and to be purchased, based on special reports from official sources. 10½ pp., Municipal Journal, Jan. 4. 10 cts.

Chicago Public Works Methods. Purchase of coal by specifications, street cleaning, pump efficiency, records of subsurface structures, water waste and leakage. 1 p., Municipal Journal, Dec. 21. 10 cts.

Annual Review of Municipal Progress. Paper before National Civil Service Reform League. By C. R. Woodruff. 1 p., Citizens' Bulletin, Cincinnati, Dec. 16.

The New San Francisco. By A. C. David. Illustrated, 26 pp., Architectural Record, January. 25 cts.

A Study of Frankford-on-the-Main. Paper before National Municipal League. By W. D. Foulke. 2 pp., City Life, Dec. 14. 5 cts.; 2 pp., Dec. 21. 5 cts.

Holyoke Abreast of the Times. What its Board of Trade is endeavoring to accomplish. 7 pp., Western New England, December. 15 cts.

Sheffield's City Engineer's Report. 1¼ pp., Surveyor, Dec. 1. 40 cts.

Street Railway Semaphore Towers. Illustrated, ½ p., Municipal Journal, Dec. 21. 10 cts.

Electric Trolley Omnibus System and Railless Traction. By H. M. Boot. Illustrated, 2 pp., Surveyor, Dec. 22. 40 cts.

Rapid Transit Tunnel. Notes of the Survey of a Subaqueous. Methods followed in the surveys in the East River Rapid Transit Subway tunnel at New York. Illustrated, 2½ pp., Engineering Record, Jan. 6. 10 cts.

Smoke Prevention in Large Power Stations. From paper before International Association for the Prevention of Smoke. By H. S. Bassar. ¾ p., Canadian Engineer, Dec. 28. 15 cts.

Pittsburgh Smoke Ordinance. ¾ p., Engineering News, Jan. 4. 15 cts.

Smoke Abatement in Great Britain. By J. B. C. Kershaw. 2 pp., Power, Dec. 19. 5 cts.

Steam Shovel, Trench Excavation by. Adaptable to any trench in firm soil six feet or more wide; method of sheeting. Details of plan adopted for sewer work on Staten Island. Illustrated, 3 pp., Municipal Journal, Jan. 4. 10 cts.

Selecting and Operating Steam Shovels. By D. J. Hauer. 2 pp., Contractor, Dec. 1. 20 cts.

Costs of Steam Shovel Work. From report by Construction Service Company to Bucyrus Company. Illustrated, 3 pp., Engineering & Contracting, Dec. 13. 10 cts.

Conveying and Elevating Machinery—Bucket Elevators. By Reginald Traut-schold. 4 pp., Industrial Engineering, January. 20 cts.

Conveying and Elevating Machinery. Spiral conveyors. By Reginald Traut-schold. 4 pp., Engineering Digest, December. 20 cts.

Tunnelling in Clay Ground. Methods of. By A. D. C. Blanchard, Lethbridge, Alt. Illustrated, 2½ pp., Contract Record, Jan. 3. 20 cts.

Concrete, Safe Velocities of Water on. By A. P. Davis. Illustrated, 2 pp., Engineering News, Jan. 4. 15 cts.

Labor Law, Opinion on the Alien. 5 pp., Bulletin of the General Contractors' Association, December.

Fuel in the United States, Is Peat an Important? By C. A. Davis. Illustrated, 3 pp., Power, Dec. 19. 5 cts.

Vehicle Bodies, Special Commercial. Dumping and other quick unloading types. By Morris A. Hall. Illustrated, 4 pp., Commercial Vehicle, December. 20 cts.

NEWS OF THE SOCIETIES

Indiana Sanitary and Water Supply Association.—The program for the annual meeting to be held in Indianapolis, February 15-16, is as follows:

Thursday Morning, February 15—Business session, with president's address and reports. "Report on the Condition of White River, with Suggestions on Sewage Disposal," by H. E. Barnard, chief chemist for the State Board of Health. "Some Interesting Information Concerning Fire Waste and Fire Protection," by Richard Lieber, of this city.

Thursday Noon—Luncheon for delegates and visitors, with an address by Governor Marshall.

Thursday Afternoon—"The Value to a City of the Beautification of Its Streams," by George E. Kessler, landscape artist, of Kansas City; C. H. Worden, of Ft. Wayne, and Dr. Henry Jamieson, president of the Indianapolis Board of Park Commissioners. "The Latest Development in Water Purification Methods," by H. E. Jordan, of the Indianapolis Water Company. "Sanitary Survey of the Ohio River," by Jay Cravens, water chemist for the State Board of Health. "Some Interesting Developments from Pitometer Surveys and Similar Inspections," by T. C. Phillips, engineer in charge of the Chicago Water Department and Bureau of Water Wastes. "Conservation of Human Vitality," by Dr. George B. Young, health commissioner of Chicago, and Dr. M. J. Rosenoan, head of the department of hygiene of Harvard Medical College.

Thursday Evening—Banquet, with addresses by Dr. W. J. McGee, United States Department of Agriculture, who will speak on the "Lowering of the Indiana Water Level," and Dr. J. N. Nurty, secretary of the State Board of Health.

Friday Morning, February 16—"Management of Water Plants in Small Cities," E. S. Loomis, superintendent of water works of Valparaiso. "The Necessity for Conservation of the Water Supply," by F. H. Newell, chief of the reclamation service of the United States Department of the Interior. "The Economy of Combined Water and Light Plants in Small Cities," by Professor R. L. Sackett, of Purdue University. "The Value of a Public Utilities Commission," by Halford Erickson, head of the Wisconsin Railroad Commission. Adjournment.

International Conference on People's Baths and School Baths.—An international conference on people's baths and school baths will be held this year at Scheveningen (The Hague), during the last week of August.

The preliminary circular, issued by the Committee on Organization, states that the chief purpose of the meeting is the promotion of public interest in bathing, and that it is intended to afford an opportunity to all those interested in the subject to compare notes regarding the best manner of arranging and operating public and school baths, and regarding the results obtained by existing establishments from a hygienic point of view.

Municipal authorities and civic improvement societies in all civilized countries will be invited to send delegates to attend the conference.

It is proposed to hold four sessions, embracing the following subjects:

1. Reading of essays, reports and papers regarding people's baths, school baths, factory baths, military baths, river and sea baths.

2. Discussion of technical questions relating to the water supply, the planning and general arrangement, the operation and the cost of maintenance.

3. Consideration of the attitude of the State, the province or county, and the municipal community toward this social problem.

4. Relation between public baths and public health.

No fees will be charged the delegates attending the congress, but a report of the proceedings will subsequently be published and sold at 10 francs or 8 shillings and four pence. It is particularly desired that plans, drawings, models or photographs of people's and school baths be sent, which should be addressed to the committee on exhibition.

The following are members of the organization committee: W. P. Ruysch, M. D., general inspector of the sanitary service in Zuid-Holland and Zeeland, chairman; P. M. J. M. E. Woltering, M. D., general inspector of the sanitary service in Brabant, Gelderland and Limburg, vice-chairman; Miss A. M. Douwes Dekker, editress of the paper, "Our Bath," general secretary, The Hague; Mrs. W. F. C. Furnee-Ruysch, treasurer, The Hague; Mrs. R. Out-Piebenga, late under-manageress of Sanatorium Orange, Nassau Oxord; J. N. VanHall, doctor-at-law, late alderman of Amsterdam; Joh. de Brenk, alderman of Harlem.

Dr. William Paul Gerhard, consulting hydraulic and sanitary engineer, 39 Strong place, Borough of Brooklyn, N. Y., has been chosen as member of the general international committee to represent the United States, and to organize here a national committee.

North Dakota Society of Civil Engineers.—The society will hold its annual convention in Grand Forks, February 20-21. President Sam F. Crabbe, Fargo, has recently visited Grand Forks and arranged for the meeting.

Officers of the association are as follows: President, Sam F. Crabbe; vice-president, State Engineer T. R. Atkinson, secretary, R. W. Livingston, of Mandan. There are 75 members of the organization. Papers will be read and addresses will be given. The executive board has promised to give those who attend the best kind of a time, and at the close of the meetings a banquet will be held. The association met in Fargo last year.

Association of Highway Engineers of Alabama.—State Highway Engineer W. S. Keller arranged the program for the meeting of the Association, Montgomery, January 11. A quarterly session of the State Highway Commission was held at the same time. Special invitations were sent to all probate judges and county commissioners to be present. The program follows:

11 a. m.—Annual address of President W. S. Keller. Address by Governor O'Neil. Robert E. Spragins,

Huntsville, address on "State Aid in Highway Improvement. 2 p. m.—Paper by Prof. G. N. Mitcham on "Earth Roads." Discussion led by T. D. Kemp. Paper by G. C. Seales on "Sand Clay Roads." Discussion led by C. L. Strange and S. C. Dreyfus. Paper on "Gravel Roads in Middle Alabama," by C. R. Thomas. Discussion by S. J. Cummings, D. K. Caldwell and D. R. Cook. Paper by R. P. Boyd, assistant state highway engineer on "Macadam Roads in North Alabama." Discussion by W. P. Moore and W. S. Keller. J. W. Groin will make an address on "Chert Roads in the Palaeozoic Era." Discussion by R. E. Meade and C. K. Annes and M. S. Bingham, highway engineer of Colbert and Lauderdale counties.

The engineers' association was organized early last fall during the meeting of the Alabama Good Roads Association at Selma.

League of Third-Class Cities of Pennsylvania.—A tentative program has been completed for the convention of the League of Third Class Cities and allied civic bodies at Lancaster, January 18 and 19. The arrangements for the gathering are in the hands of the Chamber of Commerce, and the sessions will be held in the Martin Auditorium.

On the first day addresses will be delivered by ex-Mayor Guthrie, of Pittsburgh, on "The American City and Its Government"; George R. Wallace, of Pittsburgh, on "Division of Powers and the Party Boss"; John Wallace Cooper, of Lancaster, on "The Essentials of the Commission Plan," and Manley O. Brown, of Meadville, on "Future Legislation."

On Thursday evening there will be an open discussion of the general subject of "Municipal Government by Commission," with a brief address by Prof. Ford H. MacGregor, of the department of political science, University of Wisconsin.

On Friday the addresses will be as follows: "Some Present-Day Tendencies of Democracy," by Prof. A. V. Hiester, of Franklin and Marshall College; "Commission Government in the West," by Professor MacGregor; "The Application of Commission Government to Cities of the Third Class in Pennsylvania," by Dr. L. S. Rowe, of the University of Pennsylvania, and "Getting Better Legislation," by J. Horace McFarland, of Harrisburg.

New England Water Works Association.—The annual meeting of the Association was held at Hotel Brunswick, Boston, Mass., January 10. Reports were received from the following committees:

"To look after and keep track of legislation and other matters pertaining to the conservation, development and utilization of the natural resources of the country." Committee—M. N. Baker, William T. Sedgwick, Leonard Metcalf, Allen Hazen, George A. Sooper.

"To prepare a standard specification for fire hydrants." Committee—H. O. Lacount, George A. Stacy, Frank A. McInness, Frederick W. Gow, William F. Sullivan.

"On uniformity of hose and gatenuts and direction of opening." Committee—Frank L. Fuller, Frank C. Kimball, Edward V. French.

"On water consumption and statistics relating thereto." Committee—

Leonard Metcalf, Frank J. Gifford, William F. Sullivan.

"To collect information as to low water yields of catchment areas in New England and at their discretion, outside of New England." Committee—Frederick P. Stearns, Arthur T. Sanford, Richard A. Hale, Harold A. Barrows, C. E. Chandler, X. H. Good-nough, James L. Tighe, Leonard Metcalf, Elbert E. Lochridge, George A. Carpenter.

National Civic Federation.—The annual meeting will be held at the New Willard, Washington, D. C., March 5-7. Seth Low, president of the organization, has sent out letters requesting the Governors of the different States to send delegates. The principal session of the convention will be devoted to consideration of "Industrial Peace and Progress."

At succeeding sessions there will be considered problems involved in the relation of the public employe to his employer, the people, such as:

Assuming that strikes in official service are inadmissible, how can public employers secure redress for just grievances which in private employment would lead to a strike?

May public employes properly organize to better their conditions of employment?

Pensions for federal, state and municipal employes.

On the third day of the annual meeting there will be sessions of the federation's departments on:

Compensation for industrial accidents and their prevention; regulation of interstate and municipal utilities; regulation of industrial corporations; pure food and drugs; reform in legal procedure, and the woman's welfare and the employers' welfare departments, devoted to interesting employers, whether public or private, in improving the conditions under which employes in all industries and in all occupations work and live.

International Association of Chiefs of Police.—Following a conference with the members of the board of directors of the International Police Association in Washington, Major Richard Sylvester, president of the organization, announced that the annual meeting of the association will be held in Toronto the middle of June. H. J. Grasett, chief constable, who is in charge of the police department in Toronto, has long been anxious to have the association meet there. Toronto has an area of twenty-eight square miles and a police force of 496 men. It has a population of 350,000. Major Sylvester thinks some police chiefs of cities in foreign countries will attend the meeting.

Mayors' Conference of the State of New York.—Mayor Charles C. Duryee, president of the organization; Mayor Elias P. Mann, Troy, treasurer, and William P. Capes, New York City, secretary, have completed the preliminary plans for the 1912 conference, which will be held in Utica. Each of the 49 cities of the State were assessed \$50 each to cover the expense of the meeting, which will be the third. The date of the meeting will be fixed by Mayor Gilmour, who will probably follow precedents and select a day late in May. A bill passed by the last legislature permits the assessment to be levied. Secretary Capes states that he had received assurances that New York City would take part in the conference this year.

Calendar of Meetings

January 16.

Engineers' Society of Western Pennsylvania.—Annual Meeting, Pittsburgh, Pa.—Elmer K. Hiles, Secretary, 2811 Oliver Bldg., Pittsburgh, Pa.

January 16-18.

Wood Preservers' Association.—Annual Convention, Chicago, Ill.—F. J. Augier, Secretary, Mount Royal Sta.

January 17-18.

American Society of Civil Engineers.—Annual Meeting, New York City.—Chas. Warren Hunt, Secretary, 220 W. 57th St., New York City.

January 17-19.

Illinois Society of Engineers and Surveyors.—Annual Meeting, Urbana, Ill.—E. E. R. Tratman, Secretary, 1138 Monadnock Bldg., Chicago, Ill.

January 18-20.

Society of Automobile Engineers.—Annual Meeting, New York City.—Coker F. Clarkson, Secretary, 1451 Broadway, New York City.

January 23-24.

Kansas Engineering Society.—Annual Meeting, Manhattan, Kan.—W. S. Gearhart, Secretary, Manhattan, Kan.

January 23-25.

American Society of Heating and Ventilating Engineers.—Annual Meeting, New York City.—W. W. Macon, Secretary, 29 W. 39th St., New York City.

January 24-26.

Canadian Society of Civil Engineers.—Annual Meeting, Montreal, Que.—C. H. McLeod, Secretary, 413 Dorchester St., West Montreal, Que.

January 24-26.

Ohio Engineering Society.—Annual Meeting, Cleveland, O.—Clyde J. Kniseley, Secretary, New Philadelphia.

January 25-27.

Indiana Engineering Society.—Annual Meeting, Indianapolis, Ind.—Charles Brusman, Secretary, Union Trust Bldg., Indianapolis, Ind.

January 29-February 3, 1912.

Second Annual New York Cement Show.—Madison Square Garden.—J. P. Beck, General Manager Cement Products Exhibition Co., 72 W. Adams St., Chicago, Ill.

February 14-15.

New England Association of Gas Engineers.—Annual Meeting, Boston, Mass.—N. W. Gifford, Secretary, 26 Central Sq., East Boston, Mass.

February 21-23.

Iowa Engineering Society.—Annual Meeting, Davenport, Ia.—S. M. Woodward, Secretary, Iowa City, Ia.

March 7-12.

International Brick and Clay Products Exposition.—Coliseum, Chicago, Ill.—Office, 815 Chamber of Commerce Bldg., Chicago, Ill.

March 7-12.

International Brick and Clay Products Exposition.—Chicago, Ill.—Office, 815 Chamber of Commerce Bldg., Chicago, Ill.

PERSONALS.

AITKEN, THOMAS M., Inst. C. E., of Scotland, and **ERNEST STORMS**, of Belgium, have been engaged to act as consulting engineers for the Coleman du Pont memorial road under construction across the State of Delaware.

CALDWELL, R. E., Cortland, N. Y., for the past two years assistant chief of the Cortland Fire Department, has succeeded A. F. Sager as chief of the department.

COOPER, ALEXANDER D., Long Branch, N. J., has been appointed superintendent of the City Water Department.

DENNIS, JOSEPH F., Belle Center, O., took the oath of office and became Mayor of Belle Center on December 30, the occasion of his 85th birthday anniversary. He has the distinction of being the oldest Mayor in the United States. Mr. Dennis has held the office of Mayor four different times for from two to three terms.

GLYNN, GEORGE A., Syracuse N. Y., for many years editor of the Syracuse Herald, has been appointed superintendent of the Bureau of Water for the city.

GREGORY, ALFRED C., Trenton, N. J., has been reappointed City Engineer of Sewers.

GREGORY, CHAS. E., New York, designing engineer of the Headquarters Department, New York City Board of Water Supply, has accepted an appointment on the engineering staff of the president of the Borough of Manhattan.

HENNESSEY, DANIEL J., Fulton, N. Y., has been appointed Superintendent of Public Works.

JOHNSON, GEO. A., Assoc. M. Am. Soc. C. E., has been engaged by the New York State Conservation Commission to investigate and report upon the pollution of shellfish in New York waters.

LEAHY, THOS. F., Hornell, N. Y., has been appointed Commissioner of Public Works.

PECK, DUNCAN W., has been appointed Superintendent of Public Works for New York State to succeed Charles E. Treman resigned.

PETERS, DR. WM. H., Cincinnati, O., has been appointed chief medical inspector and assistant health officer by the Board of Health.

SAVILLE, CALEB M., has been chosen by the Board of Water Commissioners of Hartford, Conn., to take charge of the Ncpang water supply. Mr. Saville has been formerly connected with the Panama Canal construction.

TREMAN, CHAS. E., Ithaca, N. Y., has tendered his resignation as State Superintendent of Public Works.

VOGELBERGER, JOSEPH, Youngstown, O., has been appointed Street Commissioner and will take his office February 1.

WEDGEWOOD, E. A., Salt Lake City, Utah, has been selected for Chief of Police.

WEST, GEO. W., formerly a consulting engineer of Los Angeles, Cal., has been appointed City Engineer of Glendora, Cal.

The following Mayors have been elected:

WEST VIRGINIA.

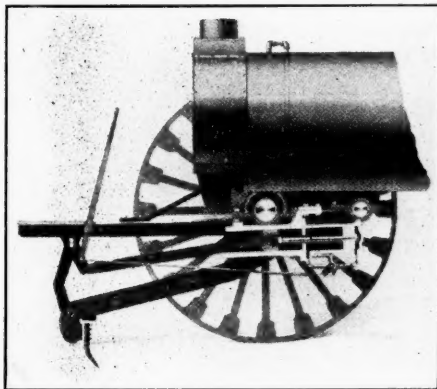
Adamston—Walter Hoyle.
Barnesville—Jas. Smith.
Brooklyn—S. S. Graze.
Barboursville—H. F. Heffner.
Broad Oaks—M. E. Henderson.
Buckhannon—H. F. Ours.
Clarksburg—C. A. Sheets.
Cairo—Sam. Hatfield.
Cameron—Bruce Crow.
Cedar Grove—Press Tompkins.
Edgewood—W. V. Hoge, Jr.
Elm Grove—Henry Stein.
Fairview—E. E. Reeder.
Fayetteville—Frank H. Brazie.
Farmington—J. C. Parrish.
Follansbee—Mr. Brandon.
Fulton—Herman Roeder.
Harrisville—W. H. Westfall.
Hurricane—W. T. Davis.
Kenova—R. E. Partlow.
Keyser—F. H. Barber.
South Keyser—Luther Stafford.
Lumberport—M. L. Riblett.
Montgomery—Thos. Davis.
Milton—E. B. Irwin.
Mononagh—Thos. G. Price.
Northview—H. M. Richards.
Patterson—Wm. F. Folmar.
Petersburg—R. W. Baker.
Piedmont—W. Clay Shaw.
Pennsboro—J. L. Fordyce.
Pleasant Valley—D. C. List.
Ravenswood—M. E. Ginther.
Rivesville—S. L. Tootham.
Welch—Wm O. Perry.
Worthington—J. L. Parish.
Williamsport—B. L. Bulman.
Woodsdale—J. N. Dowler.
Windsor—J. W. Hanna.

MUNICIPAL APPLIANCES

Road Scarifying Attachment for Steam Roller

The Huber Manufacturing Company, Marion, O., have placed on the market a road scarifier operating on an original principle. The device is an attachment to the Huber steam roller. The teeth are held down into the ground by the pressure of steam in a cylinder, which, however, has sufficient elasticity to permit the teeth to ride over an obstruction such as a solid rock.

The attachment is built to, and made a part of, the roller outfit. Nine heavy spikes, properly shaped and spaced, are attached to the front of a heavy Z-shape bar, as long as width of roller at



HUBER SCARIFIER, SIDE VIEW.

rear. This bar is connected by strong rods to the rear axle, on which all the pulling strain comes. The shape of the spikes is such that as the roller travels forward they are drawn into the ground, tearing and breaking it up to a sufficient depth to leave the whole mass loose and in condition to be easily shaped up by the grader. When not in use, the spikes are carried clear of ground, and high enough that they do not interfere with any other use of the roller.

Attention is called to the width of road surface that is worked: A strip as wide as the extreme width of roller. The spikes are raised and lowered by steam power. A simple cylinder is placed beneath rear of boiler, and steam conveyed to it by pipe from top of boiler. The valve admitting steam alternately to either end of cylinder is

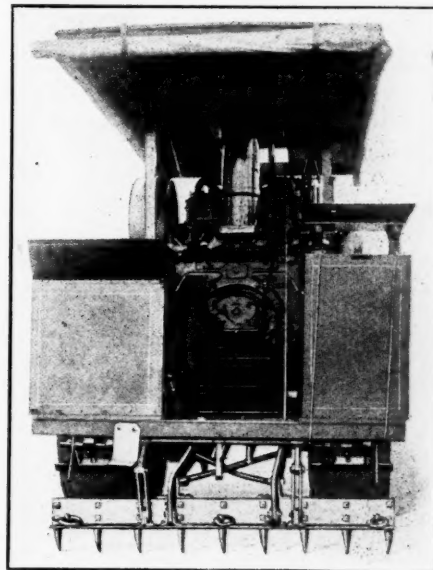
operated by the straight lever at platform. As the piston travels forward or back, motion is transmitted to the spike bar, raising or lowering it. When the scarifier is thrown down the spikes are held in ground by steam pressure. This gives cushioned compression. For instance, if solid rock should be encountered, the piston working against the steam will permit the spikes to raise enough to pass over, but they are forced down again immediately after passing.

The steam pressure feature is said to give uniform working depth of the spikes at all times. No matter what the position of the roller wheels on an uneven road, the scarifier will follow the surface and tear it up to same depth in the low places as the high spots. When the grader or scraper follows, the whole surface will be found uniformly broken up. The surface of a street may be broken up right to a crossing, then the spikes raised and carried across and dropped down exactly at the other side, without disturbing the walk or delaying the machine. It takes but a fraction of a minute to raise or lower the scarifier, and the whole operation is controlled by the one lever. The boiler of the Huber is high mounted, and this allows plenty of room for attaching the cylinder beneath. This device has been patented by the Huber Manufacturing Company of Marion, Ohio. It has been tested out, and will be for sale to purchasers of Huber rollers this year.

Cockburn Pumping Engines

The Cockburn Company, 12th, 13th and Monmouth streets, Jersey City, N. J., manufacture several types of pumping engines, including: Triple-expansion crank and fly-wheel; horizontal triple-expansion crank and fly-wheel, and duplex direct-acting high duty. The accompanying illustration is of a horizontal three-cylinder compound crank and fly-wheel, Groshon engine. It is claimed that this has a greater capacity than other pumping engines of the same dimensions, as the speed is limited only by that of the steam engine. The steam cylinder and valve gear are of the Corliss principle and can be arranged as a three-cylinder compound or triple-expansion type. Each engine operates a single-acting water plunger. The connecting frames between the steam and water cylinders are of the girder type. The three cranks are spaced

120 degrees apart. The crank shaft bearings are secured to the engine frame. The speed of the engine is controlled by a ball-governor having hydraulic attachment, which releases the steam-valves and regulates the speed of the engine by the combined action of the ball-governor and water pressure. This is an important feature, as it controls the speed and water pressure automatically. The water-chambers have liberal valve area, which insures the filling of the same at the high speed. The single-acting water-plungers are driven by distance-rods extending from the engine crosshead through casings in water-chambers to cross-head on plungers, and as the work of plungers is done on the forward stroke, the strain on the distance-rods is wholly tensile under load, which feature permits the engine to run at a high rate of speed without vibration of moving



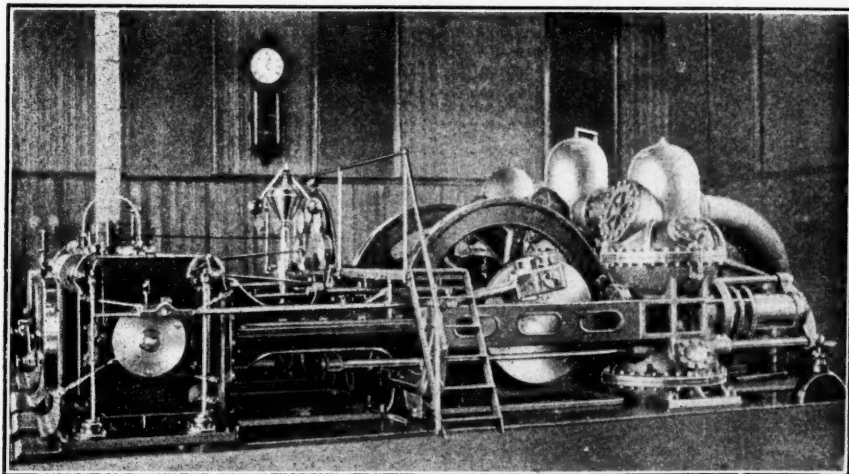
HUBER SCARIFIER, END VIEW.

parts. The position of the cranks is such as to produce a continuous flow of water through the mains, thus affording constant pressure. A condensing engine of this type will give a duty from 110 millions and above, depending on size and conditions. A non-condensing engine will give an economy of from 65 to 85 millions; the range of duty is dependent on conditions such as steam pressure, etc.

These engines have been installed in the following water works: New York, N. Y., four triple-expansion engines, 210 feet head, each five million gallons; Jamaica Water Supply Co., Jamaica, L. I., N. Y., one three-cylinder compound engine, 220 feet head, capacity five million gallons; Baltimore, Md., Baltimore Water Co., one three-cylinder compound engine, 200 feet head, capacity five million gallons.

Crane Trolley

The Cleveland Crane and Engineering Co., Wickliffe, O., have placed a new type of crane trolley on the market. The makers claim unusual simplicity, a complete absence of loose bearing brackets, and strength for very heavy service. The hoisting mechanism consists of a cable-winding drum of large diameter, mounted on a heavy forged shaft, running in a bronze bearing. The trolley traverse is accomplished by one long axle extending across the trolley, on which are keyed two driving wheels. The two main frames are held together by a heavy structural tie-piece, riveted to the frame casting.



COCKBURN HORIZONTAL HIGH DUTY PUMPING ENGINE.

INDUSTRIAL NEWS

Cast Iron Pipe.—Birmingham: A number of small orders are under consideration. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21; special fittings, \$45 to \$50. San Francisco: Little new business has come out though a good movement is expected before the end of January. New York: The general situation is very much better than a year ago, as foundries are well supplied with work. Quotations: 6-inch, carloads, \$22 to \$23.

Lead.—Market is quiet. Quotations: New York, 4.45c; St. Louis, 4.325c.

Cables and Conduits.—The National Conduit & Cable Company, 41 Park Row, New York, has added to its various departments a large brass foundry under special laboratory supervision, for making high class castings of all descriptions. The high-grade products turned out in the company's other departments should be a guarantee of what to expect from this.

Industrial Instruments.—The Precision Instrument Company, manufacturer of measuring and regulating instruments, Detroit, Mich., has increased its capital stock from \$24,000 to \$48,000 for the purpose of adding to its working capital to take care of its increasing business and also to provide for placing on the market several new inventions for steam and gas plants which will be put on the market in the near future.

Cast Iron Pipe.—Contracts are being let by the United States Cast Iron Pipe & Foundry Company for the erection of additional buildings at its works in Birmingham, Ala. The Ritter-Conley Mfg. Company, Pittsburgh, has been given the contract for 1,500 tons of material.

Garbage Reduction Company.—James T. Moorman, who recently obtained the Indianapolis garbage disposal contract, is head of the Indiana Reduction Company, which has filed articles of incorporation with the Secretary of State. The purpose of the company, which is capitalized at \$200,000, is to construct and operate a plant for the reduction of garbage to fertilizer, tankage and other salable garbage products. In addition to Mr. Moorman, the directors are Henry C. Starr, of Richmond, and Fred Shaw, of Winchester.

Fireman's Safety Belt.—Lieutenant John Hogan, Ladder 4, Boston Fire Department, has been granted a patent for an improved fireman's belt which he claims will furnish the greatest means of safety and protection of any device of its kind. A novel means is provided for attaching the belt to a ladder so that the fireman may have full use of both hands. It can also be used for supporting a hose, carrying fire extinguisher or other purposes. The belt itself can be made of canvas adapted to encircle the body of the fireman, it having a buckle and a tab to be inserted in the buckle. A strap fastened to one end of the belt is provided at the other end with a hook which hooks into an eye carried by the belt. There are several layers or piles of strap which are fastened by rivets making a strong connection.

Lighting Merger.—Official announcement was made by S. B. Harting, secretary and manager of the Elwood Electric Light Company there since its organization in 1892, that the entire stock of the company had been purchased by the American Gas & Electric Company of New York City, the same company owning the light plants at Muncie, Marion, Alexandria and Hartford City. The company took complete charge of the business here, although S. B. Harting will be retained as manager with Charles Harting as secretary, with no change in the list of employees. The price paid is said to have been \$135,000.

The Elwood plant will furnish the current for the lighting of Alexandria and immediate work will be begun upon the construction of a line between the two cities. It is stated that a line will later be placed between Muncie and Alexandria, and still later between Alexandria and Marion.

Steam Pumps.—The International Steam Pump Company, New York, has issued a report covering the 18 months ended September 30. The total net profits of the company during this period were \$2,676,449. The total assets of the company are \$48,166,635. The following is a list of the manufacturing plants of the company in the United States: Henry R. Worthington, Harrison, N. J.; Blake & Knowles Steam Pump Works, East Cambridge, Mass.; Clayton Air Compressor Works, East Cambridge, Mass.; Laidlaw-Dunn-Gordon Company, Cincinnati, O.; Snow Steam Pump Works, Buffalo, N. Y.; Deane Steam Pump Company, Holyoke, Mass.; Holly Mfg. Company, Buffalo, N. Y.; Power & Mining Machinery Company, Cudahy, Wis.; Jeanesville Iron Works Company, Hazleton, Pa.; Denver Rock Drill & Machinery Company, Denver, Col.; Fred M. Prescott Steam Pump Company, Milwaukee, Wis.

Bridge and Road Machinery.—The Attica Bridge & Iron Company, Attica, Ind., has completed arrangements to remove its plant to East St. Louis, Ill. The company has acquired a large tract upon which the new plant will be installed in new buildings. It will expend \$250,000 in building and plant. The force will be doubled as soon as capacity is provided. The company fabricates structural material and builds road machinery, for which there is an increasing demand.

Power Plant.—In preparation for the construction of an enormous electric power plant in the mountains of the Southern San Joaquin Valley, the Pacific Light & Power Company has closed a deal in New York by which all of its many properties in this State are mortgaged for \$35,000,000. The mortgage is taken by the United States Mortgage & Trust Company, of New York. The power company plans to construct in Kern County a power plant which will develop 150,000 horsepower. This plant will furnish power in the oil fields of the San Joaquin Valley and also be available for use in Los Angeles and in other cities of Southern California.

Destroyer of Vegetation.—The Atlas Preservative Co., Belleville, N. J., manufacture a number of chemical compounds included in the general classification of preservatives. Atlas Preservative A is a weed or vegetation destroyer and ground sterilizer, suitable for application on pathways, sidewalks and driveways. It is claimed that the preservative will even destroy seeds. When applied to new roads, it is stated, the preparation will prevent weed growth for an entire season. Moreover, the chemical has dust preventing properties. The cost of treatment is given as 75 cents per 1,000 square feet.

Cement.—Stockholders of American Cement Company of New Jersey elected R. P. Cregar a director to succeed George W. Norris, resigned. Other directors were re-elected.

Concreting in Cold Weather.—The Universal Portland Cement Company, Chicago and Pittsburgh, have published a booklet describing the best ways of mixing, handling and depositing concrete in freezing weather. This is perhaps the first time that any thorough study of the subject has been published in pamphlet form. The booklet is distributed free of cost.

NEW CORPORATIONS

Stiles Steel Bridge & Concrete Co., Chicago, Ill.; \$25,000; contracting and construction; John W. Worthington, Byron C. Thorpe, Louis W. Frank.

The Richland Macadam Co., Waldo, O.; to operate a stone quarry. Incorporators: Thomas Carroll and others.

F. X. Muller Hose Coupler Co., Buffalo; manufacturing hose couplers, metal articles, etc.; capital, \$100,000. Incorporators: Frank X. Muller, 26 Lyth avenue; Joseph Bronold, 1335 Jefferson street; Crescentia Hurley, 70 Landon street, Buffalo.

The Brook Electric Construction Co., Cleveland, O.; manufacturing and dealing in supplies and all things incident to the electrical business; capital, \$10,000. Incorporators: John L. Schreiner, R. John Wilson, W. J. Hart, H. W. Canfield and H. H. Canfield.

The Richland Macadam Co., Waldo, O.; capital, \$20,000. Incorporators: Thomas Carroll, T. A. Gruber, Frank G. Ebert, Philip Meister and O. M. Mills.

The Coldwater Lighting Co., Coldwater, O.; capital, \$10,000. Incorporators: William Jaspersen, M. Jaspersen, M. E. Smith, F. M. Smith and C. W. Backus.

Algonquin Light, Heat & Power Co., Dayton, O.; capital, \$10,000. Incorporators: Fanny H. Peirce and others.

Indiana Reduction Co., Indianapolis, Ind.; capital, \$200,000. Incorporators: Jesse T. Moorman, Indianapolis; Henry C. Starr, Richmond; Fred Shears, Winchester.

The Indiana Bermudez Asphalt Co. and the Central Bermudez Co., both of Philadelphia, filed notice of dissolution in Indianapolis, Ind.

Essex Interurban Construction Co.; capital, \$750,000. Incorporators: F. E. McWhiney, Wm. J. Maloney and Herbert E. Latter, all of Wilmington, Del.

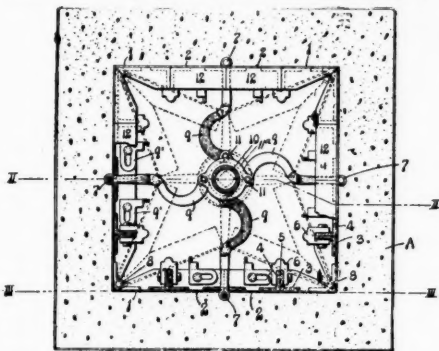
Virginia Marble & Stone Quarries Co., Inc.; capital, \$100,000. Incorporators: M. E. Dorsey, E. J. May and M. C. Betz, all of Wilmington, Del.

The Gaynor Contracting Co.; capital, \$50,000. Incorporators: Katherine M. Gaynor, Thomas P. Gaynor and Wm. L. Gaynor, all of Scranton, Pa.

PATENT CLAIMS

1,013,251. MOLD FOR MAKING HOLLOW CONCRETE COLUMNS. Charles H. Witthoeft, St. Louis, Mo., assignor to Witthoeft Collapsible Concrete Forms Co., St. Louis, Mo., a Corporation of Missouri. Serial No. 592,790.

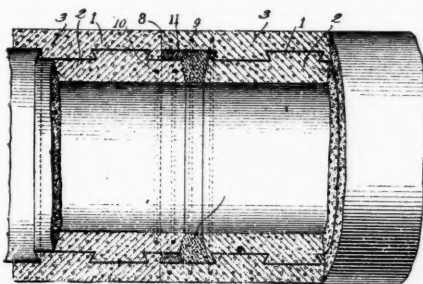
In a mold of the character described, mold plates hinged to each other at the corners of the mold, intermediate hinges connecting the mold plates at points between the corners of the mold, said intermediate hinges being provided with pin-



cles, operating arms pivoted to the pintles of said intermediate hinges, and means for actuating said arms to simultaneously pull all of said pintles toward the center of the mold, thereby causing all of the mold plates to swing on their hinges toward the center of the mold and simultaneously shifting the corner hinges toward the center of the mold.

1,013,660. WATER CONDUIT. Gustave Kaufman, New York, N. Y., and Coleman Meriwether, Montclair, N. J. Serial No. 488,822.

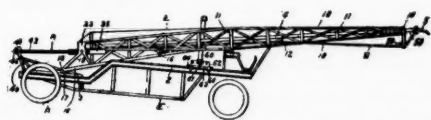
A conduit for conveying water under pressure, comprising a plurality of sections each consisting of a metal foundation pipe providing the tensile strength to withstand the internal pressure and incased inside and out in concrete and each section having at one end an outer rabbet exposing the foundation pipe and



at the other end an internal rabbet exposing the foundation pipe, the foundation pipe at the outwardly rabbeted end being smaller than at the other end, whereby to leave a calking space between the foundation pipes of the contiguous sections when the smaller end of the one is positioned in the larger end of the next; and a calking of suitable material in said space.

1,013,323. WATER TOWER. Frederic Scott Seagrave, Detroit, Mich. Serial No. 215,664.

The combination with a wheeled fire apparatus having an elongated horizontal carrying portion, of a base adjustably connected to said elongated carrier, a branch coupler secured upon said base, a



standpipe secured to said branch coupler and projecting vertically therefrom, a nozzle secured to the upper end of said standpipe, and means for securing said base in any position to which it may be moved along the said elongated carrier.

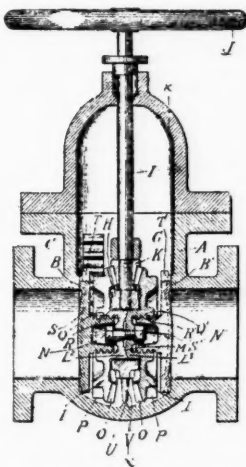
1,013,283. METHOD OF AND APPARATUS FOR TREATING ASPHALTIC OILS FOR THE PRODUCTION OF ASPHALT AND THE RECOVERY OF LIGHTER PRODUCTS. Franklin H. Dunham, Santa Paula, Cal. Serial No. 557,817.

The method of obtaining asphalt cement from asphaltic oils, which consists in

heating a charge of the oil to a temperature between 400 and 600 degrees Fahrenheit within a shell by heat applied to the bottom of the shell; removing asphaltic solution from the bottom of the charge in the shell and condensing outside said shell vapors arising from said solution; returning the unvaporized portion of said solution to the top of the asphaltic charge in the shell and removing vapors from the shell.

1,012,970. VALVE. Meredith Leitch, Springfield, Mass. Serial No. 549,717.

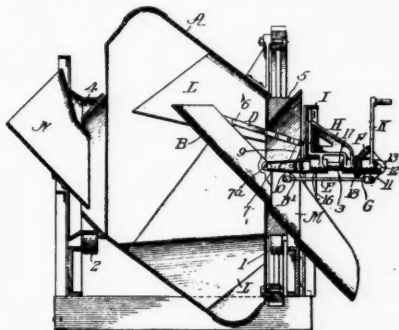
In a valve, the combination of a valve casing, a shaft and a pinion carried by said shaft, a geared member engaged by said pinion and adapted to be rotated thereby, a valve disk, said geared member



and disk having, one a screw threaded projection and the other a co-operating screw threaded recess, and also having peripheral gear teeth, and racks on said casing engaged by said peripheral teeth.

1,013,109. MACHINE FOR MIXING CONCRETE AND THE LIKE. Charles E. Bathrick, Chicago, Ill., assignor to Frederick C. Austin, Chicago, Ill. Serial No. 497,149.

A rotary mixing drum provided with an end discharge opening; a chute for receiving material within the mixing drum and for discharging such material therefrom by way of the end discharge open-



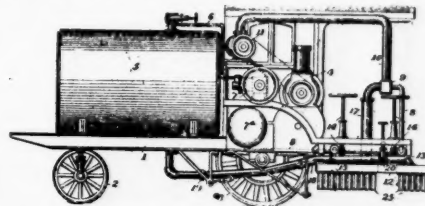
ing or passage; means for elevating material within the mixing drum and discharging the same into the chute; a rotary device for laterally turning the chute into and out of receiving position, the chute being hinged to said turning device for end tilt in direction and to an extent to incline the chute downwardly and outwardly when it is turned into receiving position, and conversely to swing the chute toward a position parallel with its axis coincident with the axis of the turning device when the chute is turned by said turning device into an inactive position.

1,013,610. WALL CONSTRUCTION FOR DAMS OR DIKES. William E. Pedley, Riverside, Cal. Serial No. 558,663. Renewed. Serial No. 640,356.

A wall formed of loose boulders, a retaining envelope formed of mesh holding said boulders in position, and transverse members attached at one end to the envelope on one side of said wall and at the other end of the said envelope to the other side of said wall to prevent said lower edges from separating outwardly.

1,013,512. ROAD-MAKING MACHINE. Michael A. Popkess, Kansas City, Mo. Serial No. 540,993.

A machine for the purpose described, comprising a header adapted to be moved along in contact with the surface, a plu-



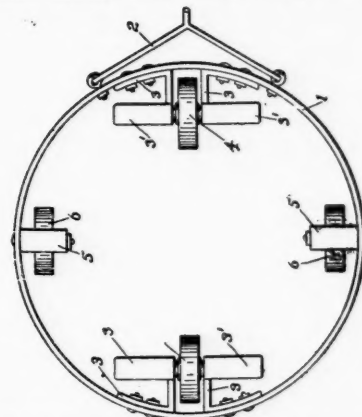
rality of hollow teeth depending below said header and means to eject a liquid binder from the rear side of said teeth.

1,013,622. MOTOR FIRE ENGINE. Jas. M. Schoonmaker, Jr., Pittsburgh, Pa. Serial No. 479,764.

In an automatic fire engine, the combination of an engine, a shaft driven thereby, a fly wheel on said shaft, a second shaft, a clutch member on said second shaft adapted to engage said fly wheel, a slidable gear wheel on said shaft, a pump, a pump shaft, a gear on said pump shaft with which said first named gear is adapted to engage, slides, rock shafts, connections between said rock shafts and said clutch member and sliding gear, a lever, and connections between said lever and said slides, whereby the clutch member and sliding gear may be operated independently of each other.

1,013,605. TRUCK FOR GARBAGE CANS. Matthew T. Lyon, Salt Lake City, Utah. Serial No. 529,477.

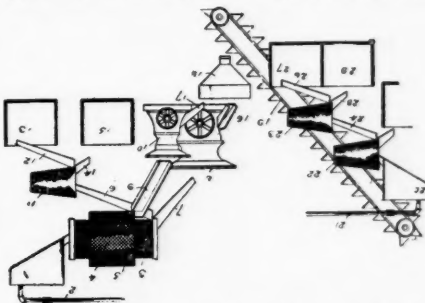
In a truck for garbage cans the combination of a band, individual bearing members for front and rear wheels attached within said band, one portion of



each of said bearing members being extended above the wheel as a can support, and wheels mounted in said members with the tread of the two side wheels placed lower than the tread of the front and rear wheels.

1,013,100. PROCESS OF PREPARING CRUSHED STONE. Harvey S. Anderson, Dayton, O. Serial No. 618,688.

A process of treating stone comprising washing the mass to remove the soluble material, loam and vegetable matter, separating the natural sand from the washed material, separating from the remaining material the gravel and small pebbles, crushing the large pebbles and



stones, rewashing the crushed material to remove the dried deposit left by the first wash water, and the scab and scale and stony adhering material loosened in the crushing operation, and finally separating from the crushed material the sharp grit resulting from the crushing operation in the form of a usable product free from natural sand, substantially as specified.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

| STATE | CITY | RECEIVED UNTIL | NATURE OF WORK. | ADDRESS INQUIRIES TO |
|----------------------------|------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| STREET IMPROVEMENTS | | | | |
| Indiana | Covington | Jan. 12 | Constrn. stone road, also gravel road. | W. B. Gray, County Auditor. |
| Mississippi | Vicksburg | Jan. 12, 8 p.m. | Paving Bowmar avenue & constrn. gravel & tar roadway. | J. J. Hayes, Mayor. |
| Florida | DeFuniak Springs | Jan. 15, noon | Constrn. 60 miles sand and clay roads. | County Commissioners. |
| Louisiana | Bastrop | Jan. 15 | Constrn. 25,431 linear feet, 4 to 8-ft. concrete walks. | J. K. Skipwith, Mayor. |
| New York | White Plains | Jan. 15 | Constrn. concrete sidewalk and stone curb. | J. J. Brown, Village President. |
| New Jersey | Jersey City | Jan. 15, 2 p.m. | Repaving Summit avenue with wood blocks. | E. B. See, Clerk Bd. Comm. |
| Michigan | Muskegon | Jan. 15, 8 p.m. | Constrn. 4,956 sq. yds. tarvia bitum. macadam or sim pave. | B. H. Tellman, City Recorder. |
| South Carolina | Orangeburg | Jan. 15, 7.30 p.m. | Constrn. 5,800 sq. yds. vitrified brick. | L. H. Wannamaker, City Clerk. |
| Oklahoma | Hugo | Jan. 16, 8 p.m. | Grading, imp. and paving 36,190 sq. yds. rock asphalt; also 5,884 ft. curb. | W. T. Eccols, City Clerk. |
| Ohio | London | Jan. 16 | Pav'g 2,800 sq. yds. with brick, asphalt or creosoted block. | City Clerk. |
| Ohio | Cleveland | Jan. 17, 11 a.m. | Improving Union road. | County Comm. |
| Ohio | Cleveland | Jan. 17, 11 a.m. | Grading, draining and improving road. | County Commissioners. |
| Indiana | La Porte | Jan. 18, 10 a.m. | Constrn. 15 miles macadamized roads. | F. A. Hausheer, County Aud. |
| Indiana | Evansville | Jan. 18, 10 a.m. | Furnishing broken stone and gravel. | Board of Turnpike Directors. |
| Indiana | Portland | Jan. 18, 10 a.m. | Improving highway in Richmond township. | W. L. Smith, County Auditor. |
| Missouri | New Madrid | Jan. 18 | Constrn. road 10 miles long. | Hal. Myers, Sec. Commissioners, Sikeston, Mo. |
| Illinois | Edwardsville | Jan. 18 | Paving two districts, cost \$75,000. | City Council. |
| Ohio | Youngstown | Jan. 18, 1.30 p.m. | Constrn. 6,773 ft. slag or limestone macadam road. | Frank Agnew, Sec. Road District. |
| Ohio | Cincinnati | Jan. 19, noon | Repairing Forest avenue. | Stanley Strubel, County Comm. |
| New Jersey | Montclair | Jan. 22, 8 p.m. | Constructing granite block pavement on concrete foundation, about 34,300 yds.; also 13,700 ft. of curbing. | Harry Trippett, Town Clerk. |
| Ohio | Arcanum | Jan. 22 | Constrn. 7,000 yds. brick pavement. | C. C. Taylor, Village Clerk. |
| Ohio | Toledo | Jan. 22, noon | Constrn. 7,900 sq. yds. paving about market house; also 2,500 ft. clay pipe. | F. G. Stockton, Sec. Director. Pub. Service. |
| Indiana | Kokomo | Jan. 22 | Paving with brick, asphalt or wood block; also curb and cement sidewalks. | Ben Havens, City Clerk. |
| Ohio | Sebring | Jan. 24, noon | Improving several streets. | Harry Jenkins, City Clerk. |
| Iowa | Carroll | Jan. 24, 8 p.m. | Improving a number of streets. | J. A. Dougherty, City Clerk. |
| Indiana | Indianapolis | Jan. 25 | Constrn. 2 miles macadam road. | A. Sam, County Auditor. |
| Indiana | Indianapolis | Jan. 25 | Constrn. road 2 miles long; cost, \$8,500. | Comms. Marion & Hendricks Co. |
| Indiana | Bluffton | Jan. 31, 11 a.m. | Constrn. gravel road. | County Comm. |
| Illinois | Rockville | Feb. 1 | Constrn. 30,000 sq. yds. brick pavement on concrete base; cost, \$60,000. | Aetna Eng. Bureau, Engr, Chicago. |
| Tennessee | Johnson City | Feb. 1, 7 p.m. | Constructing street pavements and other improvements. | City Council. |
| Chile | Santiago | Mar. 10, 10 a.m. | Constrn. 70,000 meters asphalt pavement. | City of Santiago. |
| SEWERAGE | | | | |
| Mississippi | Vicksburg | Jan. 12, 8 p.m. | Constrn. storm sewers. | J. J. Hayes, Mayor. |
| Kansas | Seneca | Jan. 12 | Constrn. sewer system and disposal plant. | Ben Havens, City Clerk. |
| Indiana | Williamsport | Jan. 15, 8 p.m. | Constrn. 1,579 ft. 4-in. sewer pipe. | Town Board. |
| Indiana | Williamsport | Jan. 15, 8 p.m. | Constrn. about 6,500 ft. 4 to 18-in. sewer pipe. | Rufus Haput, Pres Bd of Trustees. |
| New Jersey | Ventnor City | Jan. 17, 8 p.m. | Furn. 8,000 ft. 8-in. sewer pipe, 1,000 6-in. 100 branches. | E. S. Royal, City Clerk. |
| Alabama | Union Springs | Jan. 18, 11 a.m. | Constrn. 11 miles 6 to 15-in. pipe sewer. | P. L. Cowans, City Clerk. |
| Massachusetts | New Bedford | Jan. 19, 8 p.m. | Furn. sluice gates and hydraulic lifts; also tide gates. | W. F. Williams, City Engineer. |
| Kansas | Fort Scott | Jan. 20 | Constrn. clay pipe sewers; cost, \$115,000. | G. M. Sanford, City Clerk. |
| Ohio | Arcanum | Jan. 22 | Constrn. 2,000 ft. sewer. | C. C. Taylor, Village Clerk. |
| Iowa | Fort Dodge | Jan. 29 | Constrn. sanitary sewer. | City Council. |
| Missouri | Hannibal | Feb. 1 | Constrn. vitr. pipe and concrete sewers; cost, \$30,000. | B. F. Smiley, City Engineer. |
| Ohio | Canton | Feb. 1 | Constrn. 1½ miles sanitary sewer. | P. H. Webber, City Engineer. |
| Tennessee | Johnson City | Feb. 1, 7 p.m. | Constrn. 1,600 ft. pipe sewers. | P. F. McDonald, City Comm. |
| Missouri | Hannibal | Feb. 15 | Constrn. 25,000 ft. concrete and vitrified pipe sewer. | W. Y. Youse, City Clerk. |
| Missouri | Hannibal | Feb. 29, noon | Constrn. 19,500 ft. 6 to 12-in. pipe sewers and 4,100 ft. concrete box; estimated cost, \$37,000. | B. F. Smiley, City Engineer. |
| Indiana | Gary | March 1 (about) | Constrn. sewers, cost \$150,000. | City Clerk. |
| Texas | Clarksville | April 1 (about) | Constrn. 8 miles sewers, cost \$25,000. | J. R. Webb, City Clerk. |
| WATER SUPPLY | | | | |
| Pennsylvania | Erie | Jan. 12, noon | Constructing standpipe and foundations. | Comm. of Water Works. |
| Kansas | Seneca | Jan. 12 | Furn. CI pipes, hydrants and valves; also constrn. extension. | C. H. Herold, City Clerk. |
| Colorado | Pueblo | Jan. 12 | Remodeling building near water works. | Trustees Pueblo Water Works. |
| Missouri | Kansas City | Jan. 13, 2 p.m. | Cleaning 18,000 feet 36-in. water mains. | E. P. Harrington, Secretary. |
| Minnesota | Keewatin | Jan. 15 (about) | Furn. air compressor and concrete tank. | J. J. Roberts, City Clerk. |
| Oklahoma | Kingfisher | Jan. 15 (about) | Extend'g electric light system and installing water works. | W. L. Benham, Engineer, Okla. |
| Oregon | Newberg | Jan. 15 | Furn. internal combustion engine or motor, turbine pump and 10-in. supply main. | Mayor. |
| No. Carolina | Albemarle | Jan. 16 | Constr. pumping station with 2 motor-driven turbine pumps; also 6 to 10 miles pipe line. | M. J. Harris, Mayor. |
| New York | New York | Jan. 17 | Furn. and laying water main and appurtenances. | H. L. Thompson, Commissioner. |
| Nevada | Fallon | Jan. 17, 7.30 p.m. | Constrn. 30,000 ft. wood steel or CI pipe, valves and hydrants; also 200,000-gallon wood standpipe. | W. H. Reavis, City Clerk. |
| New Jersey | Ventnor City | Jan. 17, 8 p.m. | Furn. 9,400 linear ft. 4 to 12-in. CI pipe; also 5 tons lead. | E. S. Royal, City Clerk. |
| Illinois | Chicago | Jan. 18, 11 a.m. | Furn. 300 tons special castings CI water pipe. | L. E. McGann, Comm. Public Works. |
| Illinois | Danville | Jan. 18, 10 a.m. | Furn. wrought iron pipe and fittings. | W. L. Kelley, Treasurer. |
| Pennsylvania | Philadelphia | Date not stated | Hauling and laying 24,000 ft. 24-in. wood pipe and 28,500 ft. 16-in. C. I. pipe; constrn. earth dam. | Boyce Ficklen, Jr., City Clerk. |
| Georgia | Washington | Jan. 20, noon, re-ad. | Constrn. addition to water works plant. | American Pipe & Construction Co. |
| Iowa | Dubuque | Jan. 22 | Furn. and directing 2,000,000 gallons duplex double-acting, motor driven pump. | Board of Water Trustees. |
| Michigan | Grand Rapids | Jan. 25 | Furn. 375 H.P. water tube boiler. | E. H. Christ, Pres. Bd. Pub. Wks. |
| Georgia | Macon | Jan. 25 | Furn. C. I. water pipe, cost about \$80,000. | Water Commissioners. |
| South Dakota | Chamberlain | Jan. 29, 8 p.m. | Constrn. intake crib, receiving well, pumping plant, two 40-h.p. oil engines, two 350-gal. triplex pumps, piping, etc. | F. K. Berry, Mayor. |
| Spain | Bilbao | Feb. 1, noon | Filtering and sterilizing the water supply. | Secretaria del Excmo. |
| Oklahoma | Wagoner | Feb. 1 (about) | Extend'g electric light system and installing water works. | W. L. Benham, Engineer, Okla. |
| Tennessee | Johnson City | Feb. 1, 7 p.m. | Constrn. gravity water supply, approx. 12½ miles 16-in. c. i. pipe, ½ mile 18-in. pipe, 1½ miles 10-in. c. i. pipe and 4,000,000-gal. reservoir. | P. F. McDonald, City Commissioner. |
| Georgia | Bainbridge | Feb. 1 | Extending water mains. | J. E. Toole, Mayor. |

BIDS ASKED FOR

| STATE | CITY | RECEIVED UNTIL | NATURE OF WORK | ADDRESS INQUIRIES TO |
|---------------------------|----------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| LIGHTING AND POWER | | | | |
| Illinois..... | Oak Park..... | Jan. 15..... | Furn. electrical power..... | W. F. Sargent, Comm. Pub. Works. |
| New York..... | New York..... | Jan. 17..... | Furn. and installing motor-driven air compressors and appurtenances..... | H. S. Thompson, Commissioner. |
| Maryland..... | Baltimore..... | Jan. 17..... | Laying underground conduits..... | Mayor, Board of Awards. |
| Arkansas..... | Clarksville..... | Jan. 19..... | Constructing electric light system..... | F. W. Dunlap, Sec'y Bd. Imp. |
| Georgia..... | Washington..... | Jan. 20, noon..... | Overhauling and extending electric light power transmission system..... | Boyce Ficklen, Jr., City Clerk |
| Massachusetts..... | Boston..... | Jan. 24..... | Furnishing 11,000 gas mantel lamps..... | J. E. Mullen, Supt. Dept. Sup. |
| California..... | Los Angeles..... | Jan. 25..... | Furn. power plant, piping, etc., for county hospital..... | Board of Supervisors. |
| Dist. Columbia..... | Washington..... | Jan. 27, 11 a.m..... | Furn. 2 electrically-driven capstans..... | R. C. Holliday, Chief Bur. Yds. and Docks, Navy Department |
| FIRE EQUIPMENT | | | | |
| Oregon..... | Astoria..... | Jan. 27, 7:30 p.m..... | Converting horse-drawn hose and chemical wagon into auto apparatus..... | C. E. Foster, Chief Engineer. |
| California..... | Eureka..... | Feb. 6, 8 p.m..... | Furn. automobile combination chemical and hose wagon..... | City Clerk. |
| BRIDGES | | | | |
| Ohio..... | Mt. Vernon..... | Jan. 13, 1 p.m..... | Constrn. bridge, 75-ft. span, 14-ft. roadway..... | County Comm. |
| Oklahoma..... | Nowata..... | Jan. 15, 2 p.m..... | Constrn. reinforced concrete bridge..... | Ed. Elliott, County Clerk. |
| Iowa..... | Ottumwa..... | Jan. 15, 8 p.m..... | Cleaning and painting bridge..... | W. W. Cummings, Chm. St. Com. |
| Ohio..... | Sandusky..... | Jan. 15, 1:30 p.m..... | Constrn. system of pile bents for bridge approach..... | Board of Commissioners. |
| Washington..... | Seattle..... | Jan. 16, 2 p.m..... | Constrn. steel bridge..... | County Commissioners. |
| Washington..... | Olympia..... | Jan. 17..... | Constrn. sub-structures, including 2,300 yds. concrete..... | W. J. Roberts, State Highway Comm. |
| California..... | San Luis Obispo..... | Jan. 21..... | Constrn. steel highway bridge..... | County Supervisors. |
| Iowa..... | Esterville..... | Jan. 23, noon..... | Constructing several reinforced concrete bridges..... | W. H. Gibbs, Chm. Supervisors. |
| Canada..... | Brant..... | Jan. 23, 4 p.m..... | Constrn. steel bridge..... | James Warren, Engineer. |
| Arkansas..... | Osceola..... | Jan. 25, 10 a.m..... | Constrn. 17 wooden and 22 steel bridges..... | Drainage District No. 9. |
| Ohio..... | Columbus..... | Jan. 26..... | Constrn. miscellaneous bridgework..... | County Commissioners. |
| Arizona..... | Phoenix..... | Jan. 30, 2 p.m..... | Constrn. steel bridge 102 feet long..... | R. A. Craig, Sec. Board Control. |
| Ohio..... | Salem..... | Jan. 30..... | Constrn. steel superstructure of bridge..... | Board of County Commissioners. |
| Oregon..... | Portland..... | Feb. 16, 4 p.m..... | Constrn. reinforced concrete viaduct..... | A. L. Barbur, City Auditor. |
| MISCELLANEOUS | | | | |
| Ohio..... | Cleveland..... | Jan. 12, noon..... | Purchase of waste paper, rags, copper, scrap iron, bottle brass, lead, etc., collected by street cleaning department..... | A. B. Lea, Dir. Pub. Service. |
| Massachusetts..... | New Bedford..... | Jan. 15, noon..... | Furn. 10-ton steam road roller..... | Cemetery Department. |
| Massachusetts..... | New Bedford..... | Jan. 15, noon..... | Furn. sewer pipe, cement, brick, etc..... | C. F. Lawton, Supt. of Streets. |
| Virginia..... | Suffolk..... | Jan. 18, noon..... | Furn. and erecting steel stairs in City Hall..... | J. H. Mitchell, Comm. on Pub. Prop. |
| Illinois..... | Chicago..... | Jan. 18, 11 a.m..... | Furn. 300 tons CI valves, basin and fire system covers..... | L. E. McGann, Comm. Public Works. |
| Kansas..... | Topeka..... | Feb. 19..... | Furn. road roller and grader..... | Board County Commissioners. |
| New York..... | New York..... | Jan. 22..... | Constrn. Section 2, Broadway, Lexington avenue subway..... | Public Service Commission. |
| New York..... | Buffalo..... | Jan. 22, 11 a.m..... | Furn. 150,000 white enameled brick for pumping station..... | F. C. Ward, Commissioner. |
| Ohio..... | Cincinnati..... | Jan. 23, noon..... | Furn. 42 small, and one large garbage incinerators..... | Board of Hospital Commissioners. |
| Florida..... | Tallahassee..... | Feb. 1, 10 a.m..... | Building concrete lock in Miami Drainage Canal..... | J. O. Wright, Chief Engineer. |
| Virginia..... | Portsmouth..... | Feb. 6, noon..... | Erecting municipal building..... | Public Property Committee. |
| Illinois..... | E. St. Louis..... | Feb. 7, noon..... | Constrn. concrete tunnel, 9x7 ft., 95 ft. long..... | H. D. Sexton, Pres. Trustees. |

STREET IMPROVEMENTS

Cullman, Ala.—Election will be held for voting of \$350,000 bond issue to be used for construction of system of pike roads in county.

Guntersville, Ala.—Marshall County is considering \$135,000 bond issue for road construction; it is proposed to build 60 miles of turnpike connecting leading cities of county and road north and south through Guntersville and giving it to State to be used as link in Huntsville and Birmingham highway.

Fort Smith, Ark.—Petition has been filed for purpose of re-paving Garrison ave.

Lodi, Cal.—Contract to improve Thornton rd. will be let by County Highway Commission Jan. 8. Improvement will start from point three miles west of Woodbridge, known as Pope's Corner, and will extend three miles north, and thence two miles west to Talson, and from Talson to Thornton.

Los Angeles, Cal.—Part of Wilshire boulevard that faces on Windsor Square will be improved with bitulithic pavement.

San Jose, Cal.—Plan is being considered for construction of boulevard around bay, it being proposed to connect present scenic highway from Oakland to Hayward with road which will circle lower end of San Francisco Bay.

Bridgeport, Conn.—At brief meeting of Streets and Sidewalks Committee estimates prepared by City Engineer for various improvements desired by committee were gone over. He advised committee that new blocks could be laid for cost of \$36,236, while the old blocks could be used on gravel foundation on Railroad ave., from South ave. to Hancock ave., at cost of \$12,307. Estimates for Broad st. steps and Moody's Mill Pond bridge were also given.

Washington, D. C.—Commissioners are in favor of passage of Wetmore bill for widening of Benning rd., with certain amendments enlarging improvement, and have so notified Senate District Committee.

Washington, D. C.—Plans are being drawn in office of District Surveyor Hazen for condemnation of land for two new alleys. One of alleys will begin at southwest corner of Irving and Mount Pleasant sts. and extend for about 1,000 ft. into undeveloped ground. Other will be constructed between Spring rd. and

Otis st. and 11th and 13th sts northwest. **Jacksonville, Fla.**—Bids for improving John Anderson highway have been returned to bidders unopened, and County Engineer has been instructed to advertise for new bids under same specifications, excepting pavement is to be 15 ft. wide, instead of 10 ft. as original advertisement called for.

Atlanta, Ga.—Number of important street improvement projects will come up to Street Committee this year. Among them will be regrading and repaving of Ivy st.; regrading and repaving of West Peachtree st.; straightening, regrading and repaving of East Hunter st., so as to provide driveway to Grant Park; and repaving of Boulevard, so as to provide continuous driveway from Grant Park on south to Piedmont Park on the south.

Augusta, Ga.—Bids have been opened by Streets and Drains Committee of Council for gasoline road roller and scarifier. Two bids were received, and awarding of contract was deferred until Commissioner of Public Works Nisbet Wingfield has time to investigate merits of two machines. Price quoted on machines was about \$2,650. Bids were on 10-ton gasoline road roller that will develop 25 horse-power. Scarifier is to be not less than 18 in. wide.

Bainbridge, Ga.—City will construct 3 miles of paving; will open bids Feb. 1; bond issue of \$25,000 recently voted.

Chicago, Ill.—City will be in business of manufacturing all creosoted black required for street paving, and enough asphalt for repair of streets if item in budget of \$60,000 to construct creosoted block plant and another of \$50,000 for asphalt repair plant are approved by City Council.

Macon, Ga.—Improvement of Monroe st. has been asked for.

Evansville, Ind.—Finance Committee has made favorable report on ordinance presented by Board of Public Works, asking for appropriation of \$3,800 for improvement of street intersections and appropriation of \$352.82 for general expenses of the Board of Public Safety.

Evansville, Ind.—Concrete promenade will be constructed along Water st. from Division st. to Sunset Park by Board of Public Works; estimated cost \$1,200.

Fort Wayne, Ind.—Plans for the most comprehensive scheme of street improvements ever attempted in Fort Wayne have been ordered from City Engineer Frank M. Randall's office by Board of Public

Works. Contemplated paving work includes 33 streets, as follows: Superior st., from Calhoun to Wells st.; Wells st., from Superior st. to the bridge crossing the St. Mary's River; Maumee ave., from Walton ave. to Warren st.; St. Mary's ave., from Putnam to Herman st.; Harrison st., from Main to Eureka st.; Harrison st., from the first alley south of Grand st. to Butler st.; Lake ave., from Crescent to Walton ave.; Douglas ave., from Calhoun to McClellan st.; Lewis st., from Harrison to Ewing st.; McClellan st., from Lewis to Baker st.; Webster st., from Jefferson to Baker st.; Monroe st., from Berry to Holman st.; Clay st., from Washington to Holman st.; South Wayne ave., from Creighton to Orange ave.; Walnut st., from Fairfield ave. to Miner st.; Fairfield ave., from end of old pavement to Rudisill ave.; Calhoun st., from end of old pavement to Rudisill ave.; Wells st., from end of the old pavement to the Goshen rd.; Kinnaid ave., from Fairfield ave. to Broadway; Wayne st., from Grant to Glasgow ave.; Fourth st., from Clinton st. west to the present pavement; Maiden lane, from Main to Pearl st.; King st., from Wayne st. to Maumee ave.; Hugh st., from Gay to Winter st.; Wagner st., from Spy run ave. to Hanna st.; Harmer st., from Liberty to Hayden st.; Force st., from Buchanan st. to Creighton ave.; Harrison st., from Killea st. to Wildwood ave.; Butler st., from Clinton to Lafayette st.; Greenwood ave., from Main st. to Indian Creek; Barr st., from Wallace st. to Creighton ave.; Carl st., from Calhoun to Clinton st.; Huestis ave., from Broadway to Thompson ave.

Muncie, Ind.—Board has ordered plans and specifications for paving of Washington st. from the West Washington st. bridge to C. & O. Railroad.

Richmond, Ind.—Board of Works has modified resolution for improvement of No. C st., from Fort Wayne ave. to 16th st., so that it provides only for construction of cement sidewalks. It thought advisable to defer construction of cement curb and gutters.

Richmond, Ind.—Resolution has been confirmed for bricking East Main st., from 20th to 22d st.

South Bend, Ind.—Reconstruction of pavements on South Main st. between Monroe and Wayne sts. and on Laporte ave., from Washington ave. to Oak st., are among important paving contracts to be awarded in early spring. Resolutions were order by Board for Pavements on

following sts.: East Madison st and Hydraulic ave.; North Scott st., Cedar st. and Niles ave.

South Bend, Ind.—Bids have been asked for following pavement improvements: West Division st., from Michigan st. to Chapin; South Fellow st., from Bronson st. to Broadway, and Walnut st., from Colfax ave. to Laporte. Work on these improvements will be started shortly.

South Bend, Ind.—Plans for draining and paving of entire length of Mishawaka ave., River Park's most important thoroughfare, have been taken up at meeting of Board of Public Works. Petitions for improvements will be put in circulation immediately.

Council Bluffs, Ia.—Bids are being received for 25,000 sq. yds. of paving.

Topeka, Kan.—Resolution has been adopted for grading, curbing and paving of West Curtis st.

Paducah, Ky.—According to estimate made by James S. Caldwell, civil engineer, Jefferson Davis Highway will cost \$750,000. Plans, specifications and maps for proposed highway have about been completed. There are 237 miles of route which will need complete reconstruction. Remaining 87 miles are modern pike roads and will need but little work.

Baltimore, Md.—Resolution is being considered for opening of Pratt st. through to Gough st.

Monroe, Mich.—Township of Erie will vote on good roads bonding proposition Jan. 15 and call for town meeting in La Salle township for 30th inst., for same purpose has just been issued. Commencing at Ohio State line these two townships cover 11 of 17 miles in Michigan between State line and Monroe City. On Jan. 8 Monroe Council will take up paving of Monroe st. and Elm ave., which will complete stone road from Ohio State line entirely through city of Monroe except four blocks and leave unfinished but 13 miles of proposed boulevard between Monroe and Wayne County line.

Delavan, Minn.—Council will pave Walworth ave. and Racine st. with bituminous macadam.

Duluth, Minn.—County Commissioners have voted \$6,369 for work on Sturgeon Lake rd.; also City Engineer will prepare estimates of cost for paving 21st ave. west from Michigan to 3d st. with vitrified brick and sandstone for curb and gutter.

St. Joseph, Mo.—Petition has been filed asking for improvement of North and South alley between 22d and 23d sts. by grading, etc.

Atlantic City, N. J.—New ordinances for paving of uptown avenues, which were stripped bare of public improvements by recent setting aside of \$400,000 paving contracts, awarded to United Paving Co., have been proposed by new Street Committee of City Council. Bids of new contract for paving of these first Ward avenues: Vermont, New Hampshire, Euclid, Calloway and Oriental aves. and other avenues will soon be asked for.

Elizabeth, N. J.—Improvement of Broad st. is being favorably discussed.

Roswell, N. M.—Territorial Engineer Charles D. Miller has issued call for bids for construction of clay road across "Mesquero sands," about 40 miles east of Roswell. Bids will be opened Jan. 25 at Santa Fe, N. M.

Lockport, N. Y.—New State and county road work for 1912 includes Wright's Corners-Alcott Beach section of Lockport-Olcott road, and Gasport-Hartland road. Former is 8 miles in length and latter 3 miles. Contracts for these roads will be let next spring.

Lockport, N. Y.—Board of Supervisors has adopted resolution of Supervisor Fanck for improvement of one mile of South Transit st. as county highway. It is within city and improvement is desired to connect new Transit rd. to Buffalo with Lockport's business center.

Newburgh, N. Y.—Improving of Grand st. is being discussed.

Newburgh, N. Y.—Mayor recommends improvements to various streets.

Newburgh, N. Y.—Mayor recommends purchase of 10-ton roller, heavy road grading machine and horse sweeper; estimated cost \$3,000.

Fargo, N. Dak.—Council has voted to repave and curb various streets in District No. 3.

North Tonawanda, N. Y.—Mayor Pick has recommended abolishment of present street sweeping system and adoption of power sweeping system.

Randolph, N. Y.—New State road will be constructed through this town and East Randolph.

Syracuse, N. Y.—Ordinances have been adopted by Common Council for six new pavements and to resurface asphalt pavements in eight streets as follows: N.

State st., from the Erie canal to James st.; E. Willow st., from N. State to Townsend; Townsend st., from E. Willow to James; E. Fayette st., from Almond to S. Crouse; S. Warren st., from E. Genesee to S. Salina; E. Onondaga st., from S. Salina to S. State; E. Genesee st., from S. Warren to S. State; Montgomery st., from E. Genesee to E. Jefferson. New pavements as follows: Fulton st., from W. Division st. to the present pavement; Division st., from N. Clinton to N. State; E. Adams st., from S. Crouse to Irving; Madison st., from University to Irving; Harrison st., from University to Irving; S. Beech st., from E. Water to Westcott.

Syracuse, N. Y.—Ordinances have been adopted ordering sidewalks from building line to curb in several streets of 14th Ward.

Fargo, N. D.—Plans are being prepared by City Engineer for repaving and curbing with vitrified brick, sheet asphalt, bituminous concrete, bitulithic, cement concrete and Westrumite, etc., in Fourth Ward.

Akron, O.—Number of petitions to have roads in various parts of county paved under State aid law are being received by County Commissioners. One of these is for improvement of Sherbondy Hill road, and another is for improvement of Springfield Township road, beginning at intersection of Canton-Akron and Mogadore roads in Springfield Township and running through Springfield Center south to East and West Center road.

Cincinnati, O.—Paving of Bethesda and Eden aves. with wood block is contemplated to cost \$52,073.

Cleveland, O.—Ordinance will be introduced authorizing issue of bonds for improvements to various streets.

Columbus, O.—Special election will be held May 21 on \$700,000 bond issue for grade-crossing eliminations.

Dayton, O.—City Council have passed resolutions providing for paving of Mead st., Fountain and Carlisle aves.

Dayton, O.—Bids will be received until 12 noon, January 17 by City Auditor for purchase of \$18,500 worth of bonds for paving Hoffman ave.

Dayton, O.—Ordinances have been passed for improvement of various streets.

Dayton, O.—Ordinance has been adopted for issuance of bonds in sum of \$8,000 for improvement by paving of Forest ave., from Lehman st. to Main st.

Dayton, O.—Ordinance has been adopted for issuance of bonds in sum of \$1,500 for construction of intersections at Hawthorne st., from Fifth st. to Germantown st., and \$1,000 for street intersections at Dunbar ave., from Fifth st. to German-town st.

Springfield, O.—Appropriation of \$2,500 has been made for street repairs.

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Carthage, Mo.—By City for laying 7,000 sq. yds. asphaltic concrete pavement, to R. I. Boyd, at \$1.72 per sq. yd.

Maplewood, Mo.—For paving Manchester rd. from St. Louis city limits to Sutton ave., to G. A. Heman Construction Co., 444 South Theresa ave., St. Louis, at \$21,240.

St. Louis, Mo.—By Board of Public Improvements for street sprinkling for 1912. Contracts aggregated \$319,945. Contractors and districts are as follows: No. 1, Ruprecht Construction Co.; Nos. 2 and 40, William R. Bush Construction Co.; No. 3, Joseph Knaus; No. 4, Pater Fabick; No. 5, Casper Fabick; No. 6, Evermann Construction Co.; Nos. 7 and 9, August F. Pollman; No. 8, John Fabick; No. 10, Michael F. Pfeiffer; No. 11, Wurst Coal and Hauling Co.; No. 12, Mueller Coal, Heavy Hauling and Transfer Co.; Nos. 13, 26 and 27, J. E. Sippy; Nos. 14 and 33, Peter J.

Ratican; Nos. 15 and 16, Ernst Weber; Nos. 17, 18, 34 and 36, Wm. H. Redemeyer; Nos. 19, 21, 22, 23, 28, 29 and 30, Luke Coal Co.; No. 20, William Cogan; Nos. 24 and 25, Chas. A. Kalbfell; No. 31, Timothy E. Cavanaugh; Nos. 32 and 35, Frank A. Stiers; Nos. 37 and 38, Fred C. Pollman; No. 39, Wade Bros. Construction Co.

Schenectady, N. Y.—By Board of Contract and Supply for construction of new sheet asphalt pavement in Campbell ave. to Union Paving Co. Price asked by Schenectady Contracting Co. was \$39,740. Bid of Warren Bros. Co., of Boston, was \$40,730.20, and that of Union Paving Co. was \$39,688.10.

Cincinnati, O.—To Henkel & Sullivan, Mercantile Library Bldg., for paving with asphalt portion of Hackberry st. for \$13,767.

Dayton, O.—For improvement of Roney ave., from Hamilton ave. to old corporation line, by grading and graveling roadway, curbing and guttering and paving sidewalks by Board of Control to C. Burkhead, at his bid of \$8,266.

Dayton, O.—For graveling roadway and constructing sidewalks on portion of Roney ave. to C. Burkhead, 1331 W. 83d st., Cleveland, at \$8,266.

Dayton, O.—For general improvement of Grafton ave., by city to Corey Knunkle, at \$5,772.

Findlay, O.—By City for constructing 3 1/2 miles stone pike on Mt. Blanchard rd. to Clo. Edginton, of MacComb, for \$18,195.

Toledo, O.—For constructing asphalt mixing plant to East Iron Machine Co., of Lima, for \$8,998.

Portland, Ore.—By City Council for hard-surfacing of Sandy boulevard, from East 28th st. to East 72d st., to Oregon Independent Paving Co. for \$192,000. General contract covering entire street was let in two contracts, one from East 28th to Laurelhurst, for \$28,000, and other from Laurelhurst to East 72d st., for \$164,000.

Greensburg, Pa.—By Board of Westmoreland County Commissioners for construction of roads: Parnassus, Puckety Creek rd., to Rinehart Bros., of East Liverpool, O., for \$42,018; Salina, Perrysville rd., to Duster Contracting Co., of Tarentum, Pa., for \$48,897. Roads are 1.75 and 2 miles long respectively.

Greenville, Tex.—By Government to Creosoted Wood Block Paving Co. to pave lot on West Lee st. on which stands Federal building. Cost of paving will be \$1,500.

Norfolk, Va.—By City for repaving Church st., wood block to be used between Main and Queen sts. and white oak keys and old granite block to be used between Queen and Goff sts., to United States Wood Preserving Co.

Madison, Wis.—By Board of Public Works for asphalt paving on Langdon and Carroll sts., to Andrews Asphalt Paving Co., at \$13,475 and \$11,757, respectively.

SEWERAGE

Atlanta, Ga.—Chief of Sanitary Department recommends that automobile trucks be substituted for mule carts for removing refuse.

Sykesville, Ga.—City has voted \$20,000 bond issue for improvement to sewers, extension of water works and addition to school building.

Gary, Ind.—A. P. Melton, consulting engineer, has stated that he will have completed South Gary sewer system plans inside of 30 days. Immediately upon completion of plans Board of Public Works will take necessary action in order to have construction work on project start early in the spring. Estimated cost is from \$150,000 to \$175,000.

Muncie, Ind.—Board of Public Works at its regular meeting instructed City Engineer to prepare plans and specifications for construction of sewer, is to begin at intersection of Gilbert and Monroe sts., running thence south in Monroe st. to Washington st. and thence east in Washington st. to the C. & O. Railroad.

Richmond, Ind.—Resolution has been confirmed for construction of sanitary sewer, from North E. st. to railroad between 16th and 17th sts.

South Bend, Ind.—Except for Bowman Creek sewer, for which preliminary resolution has already been passed, Michigan st. trunk sewer between Monroe st. and La Salle ave. is most important drainage improvement proposed for this year. Other sewers will be built on following streets: North Olive, Ford, South Main, Clover, Johnson, North Eddy, South Francis, Birdsell and Quincy sts., and Portage ave.

Coon Rapids, Ia.—Construction of new sewerage system is being considered.

Lipton, Ia.—Installation of sanitary sewer system is being discussed.

Sioux City, Ia.—Council is considering installation of new storm water system.

Tipton, Ia.—Question of constructing sewer system is under consideration, to cost \$68,000.

Breckenridge, Minn.—Council has been petitioned to order sewer system for south side; estimated cost \$10,000.

Wadena, Minn.—Plans have been prepared by John Wilson, engineer, Duluth, for complete sewerage system.

Tecumseh, Neb.—G. A. Dunlap was lowest bidder for construction of sewerage system, and contract will probably be awarded to him.

Atlantic City, N. J.—Ordinance has been introduced covering issuance of \$20,000 bonds for improvements of sewer and waterworks plants.

Leonia, N. J.—There has been talk that Leonia Borough Council will be asked to award long term contract to one of three sewerage companies which want job of taking care of sewerage system and of providing for sewage disposal plant as demanded by State Board of Health. There is strong sentiment in Leonia against giving over sewer problem to private corporation. It is claimed that Leonia should control its own sewerage system and build sewage disposal plant under municipal control.

Trenton, N. J.—Ordinance has been passed authorizing construction of sewer No. 545, in West State st., from Parkline ave. to Eastfield ave., thence in Eastfield ave. to Riverside ave., there to connect with sewer No. 224; also in West State st., from Westfield ave. to Eastfield ave., there to connect with sewer above.

Newark, N. Y.—Citizens voted Dec. 21 in favor of constructing sewer system; probable cost \$182,000.

Bismarck, N. D.—Plans are being prepared for construction of sewer on south side of city.

Cleveland, O.—Sixty acres of land in Cuyahoga Valley at point near Willow Station may be purchased by city if plan of establishing independent sewer system for Cuyahoga Valley and of carrying this sewage to one point and treating it is adopted by City Engineer in place of old intercepting sewer scheme.

Dayton, O.—Bids will be received until 12 noon by City Auditor for purchase of \$20,000 worth of bonds for installation of storm water sewers in certain streets.

Toledo, O.—Appropriation of \$16,000 for drainage of swamp lands in North Toledo has been approved by Appropriation Committee of Council.

Altoona, Pa.—At meeting of Roselawn Civic Association and Roselawn Fire Company sewer question was taken up and committee of three appointed to look into subject.

Erie, Pa.—Plans are nearly completed for new disposal plant for Warren State Asylum, which is to be built at cost of \$45,000. Plans are being prepared by Albright and Mebus, of Philadelphia, and as soon as completed bids will be advertised for erection of new plant.

Clarksville, Tex.—City will construct about 8 miles of sewers, to cost \$25,000; bids will be opened about April 1.

Wharton, Tex.—City Council is considering question of constructing sewer system.

Lynchburg, Va.—Bids will shortly be received for purchase of bonds for sewer work.

Barboursville, W. Va.—In special election held at Barboursville bond issue of \$11,500 was authorized for purpose of installing sewer system in town. Bond issue carried by big majority, vote standing 82 to 29 in its favor.

CONTRACTS AWARDED

Pocatello, Idaho.—By City for construction of first lateral sewer, from main trunk line on East Clock st. to Lewis st. to R. M. Bardsen & Co. at \$1,700.

Chicago, Ill.—By Board of Local Improvements for constructing sewer: S. Springfield ave., Geo. Pontorelli; E. 74th pl., Thos. Burke, 4648 McLean ave.; N. Waller ave., De Vito Passarelli & Tutilli, 600 W. DeKoven st.; Tremont st., N. Leavitt st., W. 47th st., W. 48th pl., W. 48th st. and W. 49th st., to Chris. Fosco, 814 S. Des Plaines st.

Normal, Ill.—To P. F. McDonald by City Council for construction of 8 and 10-in. sewers in Cherry st., for \$810. Melliush & Broyhill, of Bloomington, Ill., are engineers.

Creston, Ia.—To Rogers-Wood Co., of Council Bluffs, for three blocks of 12-in. sewer at 60 cents per lin. ft.

New Orleans, La.—For furnishing supplies to Sewerage and Water Department of city by Executive Committee of Board, as follows: For 500,000 lbs. of lead pipe furnished in all sizes from 1/2-in. to 2-in., to National Lead Co., St. Louis, Mo., at \$24,850; 15,000 lbs. of solder, same company, \$3,075; for 60,000 lbs. of pig lead, Ahrens & Ott Co., New Orleans, at \$2,946. Bid of Wile-Gutmann Supply Co., of New Orleans, on pig lead, was rejected as informal, for reason that company did not want to make deliveries as specified in specifications.

St. Paul, Minn.—For constructing Snelling and Edmund sewer system by Board of Public Works to Gilbert W. Haggart, Fargo, N. Dak., for \$39,000; this work consists of 2,290 lin. ft. of concrete sewer from 5 ft. to 6 ft. diameter; 13,615 lin. ft. of vit. pipe from 9-in. to 24-in., with 70 manholes and 74 catch basins. Other bidders: Christ. Johnson, St. Paul, \$49,145; E. R. Harding Co., Racine, Wis., \$39,500; Pastoret Lawrence Co., Duluth, \$48,495; Illstrup & Olsen, Minneapolis, \$44,000; Gilbert W. Haggart, Fargo, N. Dak., \$39,000; Fraser & Danforth, Rochester, \$47,000; P. J. Ryan, St. Paul, \$49,773; Keough Bros., St. Paul, \$46,000; J. J. Connolly, St. Paul, \$53,000; D. W. Moore, St. Paul, \$45,963; Peterson & Johnson, St. Paul, \$41,296; Thornton Bros., St. Paul, \$47,887; John Lind, St. Paul, \$48,000; E. T. Webster, St. Paul, \$49,700; O'Neill & Preston, St. Paul, \$52,000.

St. Joseph, Mo.—By Board of Public Works for construction of three district sewers as follows: Olsen-Schmidt Construction Co., District 110; D. B. Kelley, Districts 109 and 125.

Hastings, Neb.—By City, for construction of sewer laterals in four districts, 61, 62, 63 and 65, to E. R. Bing.

Newark, N. J.—For constructing lateral sewers in Brantwood and Wyoming sections of Millburn by Township Committee to Michael Garafano, Summit, N. J., at \$5,824. Other bids as follows: William H. Reimer, Orange, \$6,550; Demate and Steffinelli, \$6,579; Pasquale Maurilli, Orange, \$6,648; Pasquale Cestone, Montclair, \$6,785; James Tusco, \$7,916; John W. Heller, Orange, \$7,941; Meile and Bruno, West Orange, \$8,267; John Dorer, Irvington, \$8,730; James A. Christie, \$9,274.

Gates, N. Y.—For constructing sewer in Otis st. to Whitmore, Rauber & Vicinus, Rochester, N. Y., at \$42,928.

Johnstown, N. Y.—For constructing 3,600 ft. of sewer to Charles J. McAleer, Schenectady, N. Y.

Cleveland, O.—To J. L. Croft & Co. and Baldwin Bros., Rose Bldg., Cleveland, O., by City for construction of sewer and water connections in Mississippi, Missouri, Savannah, Scioto, Bender, North Lockwood, Phillips, Kennebec and other streets at \$2,475 and \$10,295, respectively.

Dayton, O.—For construction of storm water sewer on Forest ave., from Grand ave. to Kenwood ave., to Hecker & Kirchner at their bid of \$4,713. Engineer's estimate on this work was placed at \$5,674.

Lebanon, Ore.—For constructing sewer system, to Bidwell & Hayden, Portland.

McKeesport, Penn.—For constructing sewers, to Henry Bolar, McKeesport, at \$5,142.

Kingstree, S. C.—For construction of sewer system and sewage disposal plant, from plans of J. Newton Johnston, of Florence, to B. F. Meeks Construction Co., of Atlanta, Ga., for \$14,264. Other bidders: Geo. W. Waring, Columbia, S. C., \$16,132; Charleston Engineering & Construction Co., Charleston, S. C., \$15,776; Dysard Construction Co., Atlanta, Ga., \$15,551; Guild & Co., Chattanooga, Tenn., \$16,733; Newport Engineering & Construction Co., Newport News, Va., \$18,500; Bond & Bates, Baltimore, Md., \$18,679; and Dobbs & Meyers, Clinton, S. C., \$15,848.

North Yakima, Wash.—To D. T. Daniels, for construction of west side drain, at \$43,386.

Toppenish, Wash.—For installing complete sewer system by City Council on Dec. 18 to McKim, Nevin & Co., of Puyallup, for about \$32,464.

Menasha, Wis.—By City Council for construction of the Nicolet ave. sewer to Joseph Quella and A. Walbrum.

Neepawa, Man., Can.—By City the following contracts for sewer and water improvements: Laying sewer and water mains, L. W. Schrueth, Fargo, N. Dak.; sewerage disposal works, L. W. Schrueth; furnishing cast iron pipe, Canada Pounding Co., Winnipeg; furnishing wood stave pipe, Dominion Wood Pipe Co., Winnipeg, and laying wood stave pipe, L. W. Schrueth.

following sts.: East Madison st and Hydraulic ave.; North Scott st., Cedar st. and Niles ave.

South Bend, Ind.—Bids have been asked for following pavement improvements: West Division st., from Michigan st. to Chapin; South Fellow st., from Bronson st. to Broadway, and Walnut st., from Colfax ave. to Laporte. Work on these improvements will be started shortly.

South Bend, Ind.—Plans for draining and paving of entire length of Mishawaka ave., River Park's most important thoroughfare, have been taken up at meeting of Board of Public Works. Petitions for improvements will be put in circulation immediately.

Council Bluffs, Ia.—Bids are being received for 25,000 sq. yds. of paving.

Topeka, Kan.—Resolution has been adopted for grading, curbing and paving of West Curtis st.

Paducah, Ky.—According to estimate made by James S. Caldwell, civil engineer, Jefferson Davis Highway will cost \$750,000. Plans, specifications and maps for proposed highway have about been completed. There are 237 miles of route which will need complete reconstruction. Remaining 87 miles are modern pike roads and will need but little work.

Baltimore, Md.—Resolution is being considered for opening of Pratt st. through to Gough st.

Monroe, Mich.—Township of Erie will vote on good roads bonding proposition Jan. 15 and call for town meeting in La Salle township for 30th inst., for same purpose has just been issued. Commencing at Ohio State line these two townships cover 11 of 17 miles in Michigan between State line and Monroe City. On Jan. 8 Monroe Council will take up paving of Monroe st. and Elm ave., which will complete stone road from Ohio State line entirely through city of Monroe except four blocks and leave unfinished but 13 miles of proposed boulevard between Monroe and Wayne County line.

Delavan, Minn.—Council will pave Walworth ave. and Racine st. with bituminous macadam.

Duluth, Minn.—County Commissioners have voted \$6,369 for work on Sturgeon Lake rd.; also City Engineer will prepare estimates of cost for paving 21st ave. west from Michigan to 3d st. with vitrified brick and sandstone for curb and gutter.

St. Joseph, Mo.—Petition has been filed asking for improvement of North and South alley between 22d and 23d sts. by grading, etc.

Atlantic City, N. J.—New ordinances for paving of uptown avenues, which were stripped bare of public improvements by recent setting aside of \$400,000 paving contracts, awarded to United Paving Co., have been proposed by new Street Committee of City Council. Bids of new contract for paving of these First Ward avenues: Vermont, New Hampshire, Euclid, Calloway and Oriental aves. and other avenues will soon be asked for.

Elizabeth, N. J.—Improvement of Broad st. is being favorably discussed.

Roswell, N. M.—Territorial Engineer Charles D. Miller has issued call for bids for construction of clay road across "Mescalero sands," about 40 miles east of Roswell. Bids will be opened Jan. 25 at Santa Fe, N. M.

Lockport, N. Y.—New State and county road work for 1912 includes Wright's Corners-Alcott Beach section of Lockport-Olcott road, and Gasport-Hartland road. Former is 8 miles in length and latter 3 miles. Contracts for these roads will be let next spring.

Lockport, N. Y.—Board of Supervisors has adopted resolution of Supervisor Fanck for improvement of one mile of South Transit st. as county highway. It is within city and improvement is desired to connect new Transit rd. to Buffalo with Lockport's business center.

Newburgh, N. Y.—Improving of Grand st. is being discussed.

Newburgh, N. Y.—Mayor recommends improvements to various streets.

Newburgh, N. Y.—Mayor recommends purchase of 10-ton roller, heavy road grading machine and horse sweeper; estimated cost \$3,000.

Fargo, N. Dak.—Council has voted to repave and curb various streets in District No. 3.

North Tonawanda, N. Y.—Mayor Nick has recommended abolishment of present street sweeping system and adoption of power sweeping system.

Randolph, N. Y.—New State road will be constructed through this town and East Randolph.

Syracuse, N. Y.—Ordinances have been adopted by Common Council for six new pavements and to resurface asphalt pavements in eight streets as follows: N.

State st., from the Erie canal to James st.; E. Willow st., from N. State to Townsend; Townsend st., from E. Willow to James; E. Fayette st., from Almond to S. Crouse; S. Warren st., from E. Genesee to S. Salina; E. Onondaga st., from S. Salina to S. State; E. Genesee st., from S. Warren to S. State; Montgomery st., from E. Genesee to E. Jefferson. New pavements as follows: Fulton st., from W. Division st. to the present pavement; Division st., from N. Clinton to N. State; E. Adams st., from S. Crouse to Irving; Madison st., from University to Irving; Harrison st., from University to Irving; S. Beech st., from E. Water to Westcott.

Syracuse, N. Y.—Ordinances have been adopted ordering sidewalks from building line to curb in several streets of 14th Ward.

Fargo, N. D.—Plans are being prepared by City Engineer for repaving and curbing with vitrified brick, sheet asphalt, bituminous concrete, bitulithic, cement concrete and Westrumite, etc., in Fourth Ward.

Akron, O.—Number of petitions to have roads in various parts of county paved under State aid law are being received by County Commissioners. One of these is for improvement of Sherbondy Hill road, and another is for improvement of Springfield Township road, beginning at intersection of Canton-Akron and Mogadore roads in Springfield Township and running through Springfield Center south to East and West Center road.

Cincinnati, O.—Paving of Bethesda and Eden aves. with wood block is contemplated to cost \$52,073.

Cleveland, O.—Ordinance will be introduced authorizing issue of bonds for improvements to various streets.

Columbus, O.—Special election will be held May 21 on \$700,000 bond issue for grade-crossing eliminations.

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Chicago, Ill.—By Board of Local Improvements for constructing cement sidewalks to General Cement Construction Co., 167 Washington st.

Greensburg, Ind.—By Commissioners of Decatur County for construction of two miles of pike in Clinton township to Wm. Avery, of St. Paul. Cost of improvement is \$9,200.

Carthage, Mo.—By City for laying 7,000 sq. yds. asphaltic concrete pavement, to R. I. Boyd, at \$1.72 per sq. yd.

Maplewood, Mo.—For paving Manchester rd. from St. Louis city limits to Sutton ave., to G. A. Heman Construction Co., 444 South Theresa ave., St. Louis, at \$21,240.

St. Louis, Mo.—By Board of Public Improvements for street sprinkling for 1912. Contracts aggregated \$319,945. Contractors and districts are as follows: No. 1, Ruprecht Construction Co.; Nos. 2 and 40, William R. Bush Construction Co.; No. 3, Joseph Knaus; No. 4, Pater Fabick; No. 5, Casper Fabick; No. 6, Evermann Construction Co.; Nos. 7 and 9, August F. Pollman; No. 8, John Fabick; No. 10, Michael F. Pfeifle; No. 11, Wurst Coal and Hauling Co.; No. 12, Mueller Coal, Heavy Hauling and Transfer Co.; Nos. 13, 26 and 27, J. E. Sippy; Nos. 14 and 33, Peter J.

Ratican, Nos. 15 and 16, Ernst Weber; Nos. 17, 18, 34 and 36, Wm. H. Redemeyer; Nos. 19, 21, 22, 23, 28, 29 and 30, Luke Coal Co.; No. 20, William Cogan; Nos. 24 and 25, Chas. A. Kalbfell; No. 31, Timothy E. Cavanaugh; Nos. 32 and 35, Frank A. Stiers; Nos. 37 and 38, Fred C. Pollman; No. 39, Wade Bros. Construction Co.

Schenectady, N. Y.—By Board of Contract and Supply for construction of new sheet asphalt pavement in Campbell ave. to Union Paving Co. Price asked by Schenectady Contracting Co. was \$39,740. Bid of Warren Bros. Co., of Boston, was \$40,730.20, and that of Union Paving Co. was \$39,688.10.

Cincinnati, O.—To Henkel & Sullivan, Mercantile Library Bldg., for paving with asphalt portion of Hackberry st. for \$13,767.

Dayton, O.—For improvement of Roney ave., from Hamilton ave. to old corporation line, by grading and graveling roadway, curbing and guttering and paving sidewalks by Board of Control to C. Burkhead, at his bid of \$8,266.

Dayton, O.—For graveling roadway and constructing sidewalks on portion of Roney ave. to C. Burkhead, 1331 W. 83d st., Cleveland, at \$8,266.

Dayton, O.—For general improvement of Grafton ave., by city to Corey Knunkle, at \$5,772.

Findlay, O.—By City for constructing 3 1/2 miles stone pike on Mt. Blanchard rd. to Clo. Edginton, of MacComb, for \$18,195.

Toledo, O.—For constructing asphalt mixing plant to East Iron Machine Co., of Lima, for \$8,998.

Portland, Ore.—By City Council for hard-surfacing of Sandy boulevard, from East 28th st. to East 72d st., to Oregon Independent Paving Co. for \$192,000. General contract covering entire street was let in two contracts, one from East 28th to Laurelhurst, for \$28,000, and other from Laurelhurst to East 72d st., for \$164,000.

Greensburg, Pa.—By Board of Westmoreland County Commissioners for construction of roads: Parnassus, Puckety Creek rd., to Rinehart Bros., of East Liverpool, O., for \$42,018; Salina, Perrysville rd., to Duster Contracting Co., of Tarentum, Pa., for \$48,897. Roads are 1.75 and 2 miles long respectively.

Greenville, Tex.—By Government to Creosoted Wood Block Paving Co. to pave lot on West Lee st. on which stands Federal building. Cost of paving will be \$1,500.

Norfolk, Va.—By City for repaving Church st., wood block to be used between Main and Queen sts. and white oak keys and old granite block to be used between Queen and Goff sts., to United States Wood Preserving Co.

Madison, Wis.—By Board of Public Works for asphalt paving on Langdon and Carroll sts., to Andrews Asphalt Paving Co., at \$13,475 and \$11,757, respectively.

SEWERAGE

Atlanta, Ga.—Chief of Sanitary Department recommends that automobile trucks be substituted for mule carts for removing refuse.

Sykesville, Ga.—City has voted \$20,000 bond issue for improvement to sewers, extension of water works and addition to school building.

Gary, Ind.—A. P. Melton, consulting engineer, has stated that he will have completed South Gary sewer system plans inside of 30 days. Immediately upon completion of plans Board of Public Works will take necessary action in order to have construction work on project start early in the spring. Estimated cost is from \$150,000 to \$175,000.

Muncie, Ind.—Board of Public Works at its regular meeting instructed City Engineer to prepare plans and specifications for construction of sewer, is to begin at intersection of Gilbert and Monroe sts., running thence south in Monroe st. to Washington st. and thence east in Washington st. to the C. & O. Railroad.

Richmond, Ind.—Resolution has been confirmed for construction of sanitary sewer, from North E. st. to railroad between 16th and 17th sts.

South Bend, Ind.—Except for Bowman Creek sewer, for which preliminary resolution has already been passed, Michigan st. trunk sewer between Monroe st. and La Salle ave. is most important drainage improvement proposed for this year. Other sewers will be built on following streets: North Olive, Ford, South Main, Clover, Johnson, North Eddy, South Francis, Birdsell and Quincy sts., and Portage ave.

Coon Rapids, Ia.—Construction of new sewerage system is being considered.

Lipton, Ia.—Installation of sanitary sewer system is being discussed.

Sioux City, Ia.—Council is considering installation of new storm water system.

Tipton, Ia.—Question of constructing sewer system is under consideration, to cost \$68,000.

Breckenridge, Minn.—Council has been petitioned to order sewer system for south side; estimated cost \$10,000.

Wadena, Minn.—Plans have been prepared by John Wilson, engineer, Duluth, for complete sewerage system.

Tecumseh, Neb.—G. A. Dunlap was lowest bidder for construction of sewerage system, and contract will probably be awarded to him.

Atlantic City, N. J.—Ordinance has been introduced covering issuance of \$20,000 bonds for improvements of sewer and waterworks plants.

Leonia, N. J.—There has been talk that Leonia Borough Council will be asked to award long term contract to one of three sewerage companies which want job of taking care of sewerage system and of providing for sewage disposal plant as demanded by State Board of Health. There is strong sentiment in Leonia against giving over sewer problem to private corporation. It is claimed that Leonia should control its own sewerage system and build sewage disposal plant under municipal control.

Trenton, N. J.—Ordinance has been passed authorizing construction of sewer No. 545, in West State st., from Parkline ave. to Eastfield ave., thence in Eastfield ave. to Riverside ave., there to connect with sewer No. 224; also in West State st., from Westfield ave. to Eastfield ave., there to connect with sewer above.

Newark, N. Y.—Citizens voted Dec. 21 in favor of constructing sewer system; probable cost \$182,000.

Bismarck, N. D.—Plans are being prepared for construction of sewer on south side of city.

Cleveland, O.—Sixty acres of land in Cuyahoga Valley at point near Willow Station may be purchased by city if plan of establishing independent sewer system for Cuyahoga Valley and of carrying this sewage to one point and treating it is adopted by City Engineer in place of old intercepting sewer scheme.

Dayton, O.—Bids will be received until 12 noon by City Auditor for purchase of \$20,000 worth of bonds for installation of storm water sewers in certain streets.

Toledo, O.—Appropriation of \$16,000 for drainage of swamp lands in North Toledo has been approved by Appropriation Committee of Council.

Altoona, Pa.—At meeting of Roselawn Civic Association and Roselawn Fire Company sewer question was taken up and committee of three appointed to look into subject.

Erie, Pa.—Plans are nearly completed for new disposal plant for Warren State Asylum, which is to be built at cost of \$45,000. Plans are being prepared by Albright and Mebus, of Philadelphia, and as soon as completed bids will be advertised for erection of new plant.

Clarksville, Tex.—City will construct about 8 miles of sewers, to cost \$25,000; bids will be opened about April 1.

Wharton, Tex.—City Council is considering question of constructing sewer system.

Lynchburg, Va.—Bids will shortly be received for purchase of bonds for sewer work.

Barboursville, W. Va.—In special election held at Barboursville bond issue of \$11,500 was authorized for purpose of installing sewer system in town. Bond issue carried by big majority, vote standing 82 to 29 in its favor.

CONTRACTS AWARDED

Pocatello, Idaho.—By City for construction of first lateral sewer, from main trunk line on East Clock st. to Lewis st. to R. M. Bardsen & Co. at \$1,700.

Chicago, Ill.—By Board of Local Improvements for constructing sewer: S. Springfield ave., Geo. Pontorelli; E. 74th pl., Thos. Burke, 4648 McLean ave.; N. Waller ave., De Vito Passarelli & Tutilli; 600 W. DeKoven st.; Tremont st., N. Leavitt st., W. 47th st., W. 48th pl., W. 48th st. and W. 49th st., to Chris. Fosco, 814 S. Des Plaines st.

Normal, Ill.—To P. F. McDonald by City Council for construction of 8 and 10-in. sewers in Cherry st., for \$810. Melliush & Broyhill, of Bloomington, Ill., are engineers.

Creston, Ia.—To Rogers-Wood Co., of Council Bluffs, for three blocks of 12-in. sewer at 60 cents per lin. ft.

New Orleans, La.—For furnishing supplies to Sewerage and Water Department of city by Executive Committee of Board, as follows: For 500,000 lbs. of lead pipe furnished in all sizes from 1/2-in. to 2-in., to National Lead Co., St. Louis, Mo., at \$24,850; 15,000 lbs. of solder, same company, \$3,075; for 60,000 lbs. of pig lead, Ahrens & Ott Co., New Orleans, at \$2,946. Bid of Wile-Gutmann Supply Co., of New Orleans, on pig lead, was rejected as informal, for reason that company did not want to make deliveries as specified in specifications.

St. Paul, Minn.—For constructing Snelling and Edmund sewer system by Board of Public Works to Gilbert W. Haggart, Fargo, N. Dak., for \$39,000; this work consists of 2,290 lin. ft. of concrete sewer from 5 ft. to 6 ft. diameter; 13,615 lin. ft. of vitl. pipe from 9-in. to 24-in., with 70 manholes and 74 catch basins. Other bidders: Christ. Johnson, St. Paul, \$49,145; E. R. Harding Co., Racine, Wis., \$39,500; Pastoret Lawrence Co., Duluth, \$48,495; Illstrup & Olsen, Minneapolis, \$44,000; Gilbert W. Haggart, Fargo, N. Dak., \$39,000; Fraser & Danforth, Rochester, \$47,000; P. J. Ryan, St. Paul, \$49,773; Keough Bros., St. Paul, \$46,000; J. J. Connolly, St. Paul, \$53,000; D. W. Moore, St. Paul, \$45,963; Peterson & Johnson, St. Paul, \$41,296; Thornton Bros., St. Paul, \$47,887; John Lind, St. Paul, \$48,000; E. T. Webster, St. Paul, \$49,700; O'Neill & Preston, St. Paul, \$52,000.

St. Joseph, Mo.—By Board of Public Works for construction of three district sewers as follows: Olsen-Schmidt Construction Co., District 110; D. B. Kelley, Districts 109 and 125.

Hastings, Neb.—By City, for construction of sewer laterals in four districts, 61, 62, 63 and 65, to E. R. Bing.

Newark, N. J.—For constructing lateral sewers in Brantwood and Wyoming sections of Millburn by Township Committee to Michael Garafano, Summit, N. J., at \$5,824. Other bids as follows: William H. Reimer, Orange, \$6,550; Demate and Steffinelli, \$6,579; Pasquale Maurilli, Orange, \$6,648; Pasquale Cestone, Montclair, \$6,785; James Tusco, \$7,916; John W. Heller, Orange, \$7,941; Meile and Brunno, West Orange, \$8,267; John Dorer, Irvington, \$8,730; James A. Christie, \$9,274.

Gates, N. Y.—For constructing sewer in Otis st. to Whitmore, Rauber & Vicinus, Rochester, N. Y., at \$42,928.

Johnstown, N. Y.—For constructing 3,600 ft. of sewer to Charles J. McAleer, Schenectady, N. Y.

Cleveland, O.—To J. L. Croft & Co. and Baldwin Bros., Rose Bldg., Cleveland, O., by City for construction of sewer and water connections in Mississippi, Missouri, Savannah, Scioto, Bender, North Lockwood, Phillips, Kennebec and other streets at \$2,475 and \$10,295, respectively.

Dayton, O.—For construction of storm water sewer on Forest ave., from Grand ave. to Kenwood ave., to Hecker & Kirchner at their bid of \$4,713. Engineer's estimate on this work was placed at \$5,674.

Lebanon, Ore.—For constructing sewer system, to Bidwell & Hayden, Portland.

McKeesport, Penn.—For constructing sewers, to Henry Bolar, McKeesport, at \$5,142.

Kingstree, S. C.—For construction of sewer system and sewage disposal plant, from plans of J. Newton Johnston, of Florence, to B. F. Meeks Construction Co., of Atlanta, Ga., for \$14,264. Other bidders: Geo. W. Waring, Columbia, S. C., \$16,132; Charleston Engineering & Construction Co., Charleston, S. C., \$15,776; Dysard Construction Co., Atlanta, Ga., \$15,557; Guild & Co., Chattanooga, Tenn., \$16,733; Newport Engineering & Construction Co., Newport News, Va., \$18,500; Bond & Bates, Baltimore, Md., \$18,679, and Dobbs & Meyers, Clinton, S. C., \$15,848.

North Yakima, Wash.—To D. T. Daniels, for construction of west side drain, at \$43,386.

Toppenish, Wash.—For installing complete sewer system by City Council on Dec. 18 to McKim, Nevin & Co., of Puyallup, for about \$32,464.

Menasha, Wis.—By City Council for construction of the Nicolet ave. sewer to Joseph Quella and A. Walbrum.

Neepawa, Man., Can.—By City the following contracts for sewer and water improvements: Laying sewer and water mains, L. W. Schrueth, Fargo, N. Dak.; sewerage disposal works, L. W. Schrueth; furnishing cast iron pipe, Canada Foundry Co., Winnipeg; furnishing wood stave pipe, Dominion Wood Pipe Co., Winnipeg; and laying wood stave pipe, L. W. Schrueth.

WATER SUPPLY

Redlands, Cal.—Installation of municipal water works is being considered.

Owensville, Ind.—Preliminary estimates have been prepared for water works system; estimated cost \$19,000.

Santa Barbara, Cal.—At last meeting of present City Council resolution ordering purchase of plant and system of Santa Barbara Water Co. for \$150,000; in 20 semi-yearly installments of \$7,500 each, was passed, all members of Council voting in favor of it.

Atlanta, Ga.—Special Mud Committee of Water Board and Bond Commission has decided to recommend to these bodies purchase of 15-acre tract of land on which to establish retaining basin for water discharged in flushing coagulating basins and filter plant at waterworks.

Blue Mound, Ind.—Bond issue has been authorized for overhauling and enlarging waterworks system.

Central City, Ia.—Special election will be held Feb. 5 for voting on proposition of issuing bonds for \$10,000 for waterworks system.

Ocheyedan, Ia.—Bond issue of \$3,000 has been authorized for completion of water works.

Des Moines, Ia.—Manager C. S. Denman, of Des Moines Water Co., has announced plans for new 20-inch water main from West 15th st. and Grand ave. to Des Moines River, which will mean vastly improved fire protection for business district of city. New main will cost about \$25,000.

Yazoo City, Miss.—City is about to install water meters. There are now 1,200 customers with 125 meters, and daily consumption is over 100 gallons. It is expected to reduce this to 50 or less. Jas. S. Butler, Superintendent.

Webster Groves, Mo.—Bonds in sum of \$75,000 will shortly be sold.

Lincoln, Neb.—Bids will be received for two pumps, capacity not less than 300 gal. per minute, lift of 100 to 120 ft.

Marquette, Neb.—Installation of municipal waterworks is being considered.

York, Neb.—Petition is being circulated to call election to vote bonds in sum of \$125,000 for purpose of building and equipping water and electric light plant in city of York.

Atlantic City, N. J.—Ordinance has been introduced covering issuance of \$20,000 bonds for improvements of waterworks and sewer plants.

Atlantic City, N. J.—Several new artesian wells are to be constructed and new pumping engine is soon to be installed under \$100,000 bond issue recently authorized by City Council.

Plainfield, N. J.—Mayor recommends sinking of wells for municipal water plant.

Trenton, N. J.—Artesian well system for water supply is said to be considered by City Commission; estimated cost \$250,000.

West Orange, N. J.—Water plant owned by municipality was recommended in message of Mayor Samuel A. Muta to West Orange Town Council.

Newburgh, N. Y.—Resolution has been adopted addressed to Council certifying that "interests of city call for and require \$10,000 for enlarging, altering and improving water works."

Oswego, N. Y.—Establishment of waterworks system in Mexico is being considered.

Hankinson, N. Dak.—Plans are being prepared for installation of municipal water system.

Alliance, O.—Mayor recommends appropriation of \$200,000 for construction of water system by utilizing Mahoning River storage plan.

Navarre, O.—Installation of municipal water works is being considered; estimated cost \$20,000.

Lorain, O.—Director of Public Service will advertise for 200 meters for water department.

McAlester, Okla.—Bonds in sum of \$50,000 have been voted for construction of additional line to Gaines Creek and also for additional pumping machinery.

La Grande, Ore.—Union water system is now assured, improvement bonds having been sold to Keeler Bros., of Denver, Col. Bonds, which amount to \$12,000, were ordered issued in recent election.

Monmouth, Ore.—Bids are being advertised for erection of new waterworks plant to cost about \$20,000.

Klamath Falls, Ore.—Establishment of municipal gravity water system has been decided.

Salem, Ore.—Mayor recommends that

city negotiate with Salem Water Co. for purchase of plant; also after plant is owned by city that new mains be laid and filtering plant installed.

Erie, Pa.—Plans have been received by Water Commissioners for erection of new standpipe. Bids will shortly be asked for.

Chamberlain, S. D.—Plans are being prepared for water works system.

Kimball, S. Dak.—City Council is preparing to lay 14,000 ft. of new water mains.

Alice, Tex.—Bonds amounting to \$24,000 have been sold for waterworks and street improvements.

Waco, Tex.—As result of conference between Water Commission of city and N. Wrenskield, of Dallas, water gallery has practically been decided upon as most available supplement to city's present artesian supply. It is proposed to dig enormous well or reservoir near Brazos River in which river water could be stored. Filtration plant to purify the water for common usage would be installed with it.

Waco, Tex.—Installation of large filtration plant is being considered by Water Commission. Large storage reservoir is also proposed.

Norfolk, Va.—Board of Control has recommended to City Council appropriation of \$1,360 for installing six-inch water main on Lovitt ave., from Park to Reeves and on Reeves from Lovitt to the power house.

Attalla, Wash.—Franchise has been granted Attalla Land Co. for construction of water system.

Grandview, Wash.—Citizens have voted \$18,000 bond issue for installation of water works system.

Granger, Wash.—Bonds amounting to \$15,000 have been voted for construction of water works.

Seattle, Wash.—Plans have been approved for laying of water mains on Dexter ave.; estimated cost \$17,000.

Cumberland, Wis.—Bids will be received for furnishing of all material and laying of 4-in. water main.

CONTRACTS AWARDED

Tallahassee, Fla.—For furnishing about 96 tons of 4-, 6- and 8-in. cast iron water pipe and six tons of fittings by Board of Public Works, Dec. 28, to Central Foundry Co., New York, N. Y.

Jesup, Ga.—To B. F. Roberts, of Macon, Ga., by City Council, Jessup, Ga., for construction of waterworks. Work includes reservoir, 100 ft. tower, 80,000-gal. tank, pumps, boilers, pipe, and will cost approximately \$30,000.

Fairfield, Ia.—To Spaulding & Kearns for erection of filter plant at \$17,000. Two triplex steam pumps will be installed.

McComb, Miss.—By City Council for extension of city water mains to B. A. Heidenreich & Co., of that city, for 64 cents per ft.

Kansas City, Mo.—By County Court to Interurban Water Co. for laying pipe line from Independence to County Home County is to pay annual rental of \$3,600, pay for water in addition, and have privilege of buying pipe.

Manhattan, Mont.—To E. Lindstrom, of Billings, for erection of new waterworks system to cost \$25,000.

Bethany, Neb.—By City, to National Co., of South Bend, for installing water works system.

Charlotte, N. C.—For constructing pumping station, suction well and intake to J. W. Haas, Charlotte, for \$19,972.

Hubbard, O.—By Council for erecting waterworks standpipe to Petroleum Iron Co.

Muskogee, Okla.—By City for 1,870 tons cast iron pipe and 50 tons special to American Cast Iron Pipe Co. Alex. Potter, Consulting Engineer, New York City.

Portland, Ore.—For water pipe, etc., as follows: To Oregon Iron & Steel Co., of Portland, for 1,800 tons 16 and 12-in. pipe, at \$30.50 per ton, and 2,000 tons 8-in., \$31.50 per ton; total, \$117,900; to the U. S. Cast Iron Pipe & Foundry Co., for 8,200 tons all sizes, \$32.35 per ton; total, \$265,270, and to Smith & Watson Iron Works, Portland, for 500 tons special castings, \$49 per ton; total, \$24,500.

Erie, Pa.—By Commissioners of Water Works to Bethlehem Steel Co., of Bethlehem, for 20,000,000-gal. vertical, triple expansion pumping engine.

Kingstree, S. C.—For construction of water works as follows: For general construction to B. F. Meeks Construction Co., Atlanta, Ga., \$13,901; hydrants, valves and valve boxes to Columbian Iron Works, Chattanooga, Tenn.; for 293 tons 8 and 6-in. cast iron pipe, \$24.60 per ton; 50 tons 4-in., \$25 per ton, and 8 tons special, \$50 per ton, to Lynchburg Foundry Co., Lynchburg, Va.; to the Chicago

Bridge & Iron Works, of Chicago, Ill., for tank and tower, \$3,950, and to Platt Iron Works, Dayton, O., for pumps, \$1,340.

Norfolk, Va.—By Board of Control for hoisting engine and dredge bucket for water department, to Hobbs-Newby Equipment Co., for \$630.30, and for bucket to William L. Miller, for \$190.

Norfolk, Va.—By City for putting down water mains on Church st., to Percy W. Ruth.

Ellensburg, Wash.—To International Contract Co., Central Bldg., Seattle, for construction of water system in this city for about \$150,000.

Elma, Wash.—To Welton, Kibbe & Cochran, of Portland, Ore., for waterworks improvements from plans of Louis C. Kelsey, Selling Bldg., Portland, Ore., as follows: Excavating and backfilling, per cu. yd., 49 cents; furnishing and laying cast iron pipe: 4-in., 54 cents; 10-in., \$1.29; furnishing and laying wire-wound wooden stave pipe: 8-in., 300-ft. head, 41 cents per ft.; 10-in., 200-ft. head, 43 cents; 10-in., 250-ft. head, 47 cents; 10-in., 300-ft. head, 51 cents; special castings per lb., 4 cents; hydrants, each, \$34.90; valves, \$10.45 to \$34.85 each; pump house, \$300; pump, \$500; 12-in. vitrified sewer pipe, per lin. ft., 45 cents; 12-in. perforated sewer pipe, per lin. ft., 80 cents; manholes, each \$75; total for pipe line, \$12,907, and for pump and engine, \$1,898.

Wapato, Wash.—For constructing pumping plant to Fairbanks Morse Co., at \$7,497. Other bids as follows: Geo. B. Adair & Co., two, \$8,300 and \$8,000; Moran Engineering Co., \$6,500; Union Machine Co., \$6,000; Perine Machine Co., \$4,500.

Victoria, B. C.—By City Clerk for repairing Smith Hill reservoir to Thos. Stedham for \$13,260.

LIGHTING AND POWER

Glendale, Cal.—With exception of few minor details everything has been arranged at meeting of City Trustees for establishment of ornamental electric lighting system on which Harry Lynch, manager of lighting plant, and Trustees have been working for six months.

Bridgeport, Conn.—Appropriation of additional \$3,273.82 has been asked for 46 new arc lamps.

Washington, D. C.—Orders have been issued by Engineering Department of District for construction of two 40 candle-power electric lamps on overhead wires on Allison st. between 14th and 15th sts. northwest, and three on Buchanan st. between 14th and 15th sts. northwest.

Anderson, Ind.—Board of Public Works will receive bids for installing 2,500 horse-power turbine engine for municipal light plant. The bidders are Allis-Chalmers Co., of Milwaukee; the Westinghouse Co., of Pittsburgh, and the General Electric Co., of Schenectady, N. Y. The cost is estimated at \$40,000.

Indianapolis, Ind.—Sheriff Jacob Woessner recommends in his quarterly report to County Commissioners that electric lights be installed in each of cells at jail. At present cells are poorly lighted by large incandescent lights which hang in corridors.

Marion, Ind.—Improvement to lighting system is being considered.

South Bend, Ind.—Proposition of Board of Public Works to install new street lights in River Park is being discussed.

Allison, Ia.—Installation of electric light system has been voted for.

Eldora, Ia.—Special election to be held Jan. 9 for voting on granting new franchise to Eldora Electric Light Co. will be postponed for several weeks.

Menlo, Ia.—Geo. C. Buckley & Co. have been granted franchise for electric light plant.

Sheldon, Ia.—Franchise of Sheldon Electric Light Co. has expired. City will vote on granting new one, or installing municipal plant.

Baltimore, Md.—Municipal lighting plant is now assured for city.

Battle Creek, Mich.—Petitions will be presented to Common Council asking city to install municipal gas plant.

Biwabik, Minn.—Council is considering ways for installation of white way.

Red Lake Falls, Minn.—Red River Power Co. has been granted franchise for electric light and power.

Two Harbors, Minn.—Council is considering proposition to install new machinery and operate pumping plant for water works by electricity. Estimated cost about \$17,000. There will be changes in apparatus to cost \$3,000; changes in buildings to cost \$3,000; 65-hp. motor at \$710; 20-hp. motor at \$1,140, and other items, including two motor generator sets costing \$6,100.

York, Neb.—Petition is being circulated to call election to vote bonds in sum of \$125,000 for purpose of building and equipping electric light and water plant.

Reno, Nev.—H. G. Comstock, local real estate man and promoter, has applied to Reno City Council for franchise for heating, lighting and water system. He is representing new company now building electrical plant east of Reno, on Truckee River. His company offers to furnish city with free water for fire purposes and free lights for streets, if franchise is granted.

Franklin, N. H.—Committee on street lighting has announced proposition of Franklin Light and Power Co. for contract to light streets for next five years and it has been voted to authorize signing of contract on terms proposed. Price per year of arcs is same as heretofore, \$65 per year for 1200 candle-power lights. Price of incandescents is to be as follows: Thirty-two candle-power, \$15 per year; 60 candle-power, \$18; 100 candle-power, \$22.50 and 200 candle-power, \$35 per year.

Camden, N. J.—Council is considering establishing municipal electric lighting plant.

Union, N. J.—Extension of lighting system is being favorably considered.

Albany, N. Y.—Public Service Commission, Second District, has authorized Pierce Natural Gas Co. to exercise franchises in town of Hamburg, Erie County, and to issue a common capital stock to amount of \$100,000 to acquire from V. Mott Pierce leases of property and equipment to pay cost of drilling additional wells.

Port Jervis, N. Y.—Mayor recommends changing, where best results can be obtained, arc lights for incandescent lights.

Rochester, N. Y.—Installation of electric lighting in town lying between city line and Barge Canal is being considered.

Alliance, O.—Mayor Edward P. Speidel issued his annual message to City Council, advocating municipal ownership of electric light and gas plants.

Dayton, O.—Bids will be received until 12 noon, Jan. 17, by City Auditor for purchase of \$30,000 worth of bonds for supplying light to city.

Defiance, O.—Napoleon Northwest has been agitating better lighting of business streets of city for long time and finally with result that Board of Public Affairs has decided to improve lighting system.

Hamilton, O.—Hamilton municipal gas plant may be rehabilitated under new municipal administration. Mr. Holzberger expects to have municipal plant gone over and if deemed profitable plant will be reopened and city engage in gas manufacture once more.

Springfield, O.—Construction of municipal lighting plant has been decided, and \$500 will be appropriated for purpose of gathering data regarding erection of plant.

Eugene, Ore.—Eugene's post cluster lights will soon be installed. Posts to number of 100 or more will be erected on business streets and light furnished from city's plant at Walterville.

Blairsville, Pa.—Blairsville Light, Heat & Power Co. has been taken over by H. J. Walbridge & Co., of No. 7 Wall st., New York, through Attorney H. S. Brown, of New York.

Philadelphia, Pa.—Ordinance providing better lighting on North Front st. and Kensington ave., from Morris st. to Lehigh ave., will be recommended to Councils by Kensington Board of Trade.

Dallas, Tex.—Street Commissioner Lee appointed special committee to secure contract for lighting streets of Dallas during coming year has received bid of \$56 per light from Dallas Electric Light & Power Co. Price last year was \$60 per lamp.

Attalia, Wash.—Franchise has been granted Attalia Land Co. for construction of electric light plant.

CONTRACTS AWARDED

Chicago, Ill.—By Commissioner of Public Works for furnishing material and installing in Roseland pumping station 2 turbo-generator units, complete with appurtenances and accessories, including steam and exhaust piping, foundations and pipe trenches, to Western Electric Co., of Chicago, for \$7,894.

Galva, Ia.—To Interstate Electric Manufacturing Co., Sioux City, Ia., for construction of electric light plant.

New Orleans, La.—By Sewer and Water Board to Allis-Chalmers Co., of Milwaukee, Wis., for power machinery for drainage system as follows: For horizontal,

high pressure, condensing, steam turbine and alternating current generator unit 6000 k.w., \$55,450; for a rotary converter erected on foundations including field rheostat, transformers, etc., 150 k.w., \$4,544; for a switchboard complete as specified, \$4,798; for 2 rotary converter panels as specified, \$1,406; total, \$66,198.

Alton, Mo.—By East Alton Village Council for lighting village, to Illinois Traction Co.

New York, N. Y.—By Commissioner of Bridges, New York City, for furnishing and installing electrical feeder cables on westerly track of upper deck of Manhattan Bridge, to Holton D. Robinson, 351 W. 121st st., for \$36,000. Other bidders: Cooper & Evans Co., \$37,337, and Waterbury Co., \$38,775.

Columbus, O.—By Superintendent City Department of Lighting as follows on bids: For furnishing 320 4-amp. magnetite lamps and four 75-light rectifier equipment for magnetite lamps, to General Electric Co., of Schenectady, N. Y., for \$11,190; and for two 400-k.w. synchronous condensers to Burke Electric Co., Erie, Pa., for \$5,200.

FIRE EQUIPMENT

Los Angeles, Cal.—Largest single order of fire hose city has ever awarded will go to Eureka Fire Hose Manufacturing Co., if this company will reduce its bid 10 cents per ft. Order is for 10,000 ft. of Paragon hose and Fire Commissioner is willing to pay \$10,000 for it. Eureka Company submitted bid of \$1.10 per ft. for this brand.

San Francisco, Cal.—Until opinion is received by Board of Fire Commissioners from City Attorney Percy V. Long, no awards will be made upon bids that have been received for supplying department with automobile truck, new automobile for Fire Chief and two automobiles for assistant fire chiefs. For automobile truck, bids were received from four concerns. The American-La France people bid \$5,630; Reliance Automobile Co., \$4,100; Consolidated Motor Car Co., \$3,650, and the White Co., \$3,500. For 5-passenger car for Fire Chief, bids were received from the Pierce Arrow, \$5,962.80; Standard Motor Car Co., \$5,780; Reliance, \$5,750; White, \$5,310; Thomas Flyer, \$5,250; Consolidated Motor Car Co., \$4,950, and Thomas B. Jeffery, \$4,200. The latter bid is for a 4-cylinder car. For cars for assistant chiefs, 4-passenger cars, bids were: Standard, \$5,790; White, \$5,310; Thomas Flyer, \$5,250; Pierce Arrow, \$5,114.35; Consolidated, 4,950; Reliance, \$4,150, and Thomas B. Jeffery, \$3,900.

Bridgeport, Conn.—Fire Commissioners have asked for appropriations for two new pieces of apparatus. First is addition of \$1,500 to appropriation of \$8,500 last year for purchase of auto-combination engine. This is gasoline pumping engine for which the sum of \$10,000 is needed. It has already been decided to purchase Waterous combination engine with this money so that it is very probable that extra amount will be allowed. Appropriation for \$3,250 is asked for purchase of Martin tractor. This is tractor which can be attached to any horse-drawn apparatus and draw it at rate of 30 miles an hour over roughest roads.

Augusta, Ga.—Counting on passage of proper ordinances and appropriations for carrying out of its plans, Fire Committee of Council is planning for style and quality of apparatus needed by them to equip new station on The Hill this year.

Coeur D'Alene, Ida.—Fire Department has asked for purchase of another hook and ladder truck; estimated cost \$6,500.

Indianapolis, Ind.—Instead of erecting new fire headquarters now and new police headquarters building later as contemplated by Board of Public Works, Mayor Shank has revived plan to erect combination fire and police headquarters on property to be bought at southeast corner of Alabama and New York sts.

Burlington, Ia.—City Council has authorized purchase of new auto truck for Central station.

Mason City, Ia.—Fire Committee has been authorized by City Council to purchase 1,000 ft. of new fire hose. Prices are asked for.

Hutchinson, Kan.—Election will be held Jan. 9 for voting on \$20,000 bond issue for new fire apparatus.

Escanaba, Mich.—City Council has authorized Purchasing Committee to obtain new combination chemical and hose wagon, harness, hangers and springs, and 2,000 ft. of 2½-in. fire hose.

Ely, Minn.—City is considering purchase of 25-gal. tank for chemical engine.

Willmar, Minn.—Election will be held Jan. 9 for voting on \$9,000 bond issue for erection of fire station.

Lincoln, Neb.—Purchase of new automobile fire engine to cost \$8,000 has been authorized.

Jersey City, N. J.—Twelfth Ward Witter Club has passed resolution asking Board of Fire Commissioners to use part of \$7,000 appropriated for new equipment to purchase auto fire truck for Hudson City section.

Morristown, N. J.—Erection of new fire department is being considered.

Plainfield, N. J.—Purchase of auto hose wagon for Hose Co. No. 1 has been recommended.

Secaucus, N. J.—Fire station will be erected to cost \$4,000.

Summit, N. J.—Common Council has been recommended to purchase auto hose wagon for Company No. 2.

Cypress Hills, N. Y.—Erection of new fire station is being discussed.

Niagara Falls, N. Y.—Meeting of Fire Commissioners will shortly be held for discussing plans already drawn for new fire hall on site of present Third st. hall, and fire hall to be erected at Whirlpool and Highland ave. Commissioners will also select new auto steamer, auto truck, auto for Chief Utz, and open bids for fire-proofing fire alarm system.

Niagara Falls, N. Y.—Information has been received by Corporation Counsel Anderson that \$42,500 issue of fire bonds has been accepted by Chisholm & Chapman. Money will be spent for erection of two new fire halls, automobile fire engine, combination auto wagon and automobile for chief. Bids will be asked for at once for fire halls.

Syracuse, N. Y.—Commissioner of Public Safety has been authorized to buy without competition 2,000 ft. of Paragon fire hose at \$1.10 per ft.

White Plains, N. Y.—Bonds amounting to \$38,000 have been voted for purchase of garage for Fire Department.

Whitesboro, N. Y.—Question of modern fire alarm system is being discussed.

Dunseith, N. Dak.—Purchase of chemical fire engine is being discussed.

Cincinnati, O.—Extensive plans of fire department to give additional protection to suburbs have been outlined.

Dayton, O.—Ordinance has been passed for purpose of appropriating real estate for erection of fire engine house.

Ironton, O.—New auto hook and ladder truck has been recommended by Director of Public Safety.

Huntsville, Pa.—Appropriation of \$35,000 will probably be asked for providing motor apparatus and other improvements.

Scranton, Pa.—Councilmen will consider purchase of two auto fire trucks.

Wilkes-Barre, Pa.—Erection of new fire house to be located between Nos. 3 and 4 on Heights is recommended by fire chief; also purchase of number of new pieces of apparatus.

Nacogdoches, Tex.—Installation of up-to-date fire alarm system will be installed.

Milwaukee, Wis.—Provision for proposed central fire station at Broadway and Martin st. and for two new engine houses, one in Eighteenth Ward and other in southwestern section of city, is made in 1912 budget. In addition \$19,000 will be spent in purchasing new and modern fire apparatus, including automobile trucks. In his recommendations Acting Fire Chief Linkman asked \$736,534.75. Board decided to allow \$721,348.25.

Superior, Wis.—City is considering appropriation for purchase of new auto fire engine.

CONTRACTS AWARDED

San Francisco, Cal.—To Consolidated Motor Car Co. to supply new four-passenger Pope-Hartford touring car to department for use of second assistant fire chief at \$4,950.

Stockton, Cal.—By Police and Fire Commission, for 2,000 ft. of fire hose, to American Rubber Manufacturing Co., at 85 cents per ft., and 1,000 ft. to Gorham Rubber Manufacturing Co., at 90 cents per ft.

Duluth, Minn.—To Star Electric Co. for installation of new signal system for fire department at \$3,200.

Joliet, Mont.—By City, for furnishing local department with 1,000 ft. of hose, to Plant Rubber Co., of St. Paul.

Philadelphia, Pa.—By City, to American-La France Fire Engine Co., of Elmira, N. Y., for following apparatus: One 900-gallon, one 600-gallon and three 500-gallon steamers.

Everett, Wash.—By City for combination automobile chemical and hose cart for fire department to American-La France Co., at \$6,100.

BRIDGES

Dothan, Ala.—When Board of County Commissioners and Highways Commission meet, main question for discussion will be how to evolve plan to raise funds for improvement of bridges and public roads.

Vincennes, Ind.—Harvey Harmon, attorney for the Princeton Commercial Club, has filed petition with Gibson County Commissioners, asking for building of wagon bridge across White River at Hazelton. Petition is signed by 800 taxpayers of Gibson County.

Boston, Mass.—In report filed by special commission appointed to report plan for reconstruction of ancient Essex Bridge between Salem and Beverly, engineers have recommended steel plate girder bridge on reinforced concrete piers, faced with granite; estimated cost \$400,000.

Arlington, Neb.—Washington County wants bridge over Elkhorn; estimated cost \$10,000.

Bayard, Neb.—Morrell County wants two bridges over North Platte, one near Bayard and other near Bridgeport; estimated cost \$20,000.

McCook, Neb.—Red Willow County wants bridge over Republican River, cost of which is not yet estimated.

Springview, Neb.—Keyapaha County has applications in for two bridges over Niobrara. One will be near Carnes and other near McCullough; estimated cost \$12,000 and \$14,000, respectively.

Ballston Spa, N. Y.—Committee appointed to consider new bridge across Hudson River, between Northumberland and Port Edward, has reported in favor of structure.

Columbus, O.—County Commissioners have opened bids for \$60,000 emergency bridge bonds which are payable in 10 years. Bonds have been awarded to New First National Bank, Barto Scott Co., of Columbus; Breed & Harrison, of Cincinnati, and Weil-Roth Co., of Cincinnati.

Toledo, O.—Appropriation Committee of Council has approved bond issue of \$135,000 for moving of old Cherry st. bridge to Ash st. Entire job will cost in vicinity of \$282,000.

Youngstown, O.—County Commissioners have been asked to take action in matter of raising bridge across river at Struthers in order to facilitate elimination of Bridge st. grade crossing. Plan is to lower tracks slightly at this point and with elevation of bridge crossing will be eliminated.

Johnstown, Pa.—Erection of bridge, preferably of concrete, across Elk Run is being discussed by Supervisors of Lower Yoder Township.

Houston, Tex.—Southwestern Construction Co., of Dallas, is lowest bidder at \$15,995 for construction of reinforced concrete bridge over White Oak Bayou, and at \$6,590 for construction of reinforced concrete bridge over branch of White Oak Bayou.

CONTRACTS AWARDED

Wichita, Kan.—To Wichita Construction Co. for construction of bridge over Ninnescah River south of Cheney at \$6,200. Bridge will be 231½ ft. long, with 16-ft. roadway. It will be of steel, supported by concrete filled steel tubes, 4½ in. in diameter, and will have a concrete floor.

Libby, Mont.—For 3 steel bridges over Kootenai River at Troy, Libby and Rexford, to Pacific Coast Bridge Co., of Portland, Ore., for \$84,000. Bridges at Libby and Troy will contain 3 spans each, with concrete piers, while the bridge at Rexford will have but 2 spans.

Cincinnati, O.—By Department of Public Service for construction of Ludlow ave. viaduct, under Sections A, B, C and D. to C. H. Glandorf, Thos. P. Strack and the Kirchner Construction Co., all of Cincinnati. Work includes concrete piling, substructure, superstructure and approach work and reinforced concrete structure. Contract price is \$259,585.

McMinnville, Tenn.—By Joint Commission of Warren and White Counties for building bridge across Caney Fork River, near Rock Island, subject to approval of County Courts of two counties. Bridge will be part of Memphis-to-Bristol highway. It will be nearly 565 ft. long and price is nearly \$15,000.

Charleston, W. Va.—By County Court for bridge across Poca River, at mouth of Kelly Creek, in Union district, to Owega Bridge Co. Contract provides that bridge shall be completed on or before May 5.

Winnipeg, Man.—For constructing substructure of Osborne St. Bridge over Assiniboine River to W. Newan Co.

BIDS RECEIVED

Baltimore, Md.—By Board of Awards for removing Warren Truss Bridge and erecting steel plate girder bridge in S. Monroe st. over the E. & O. R. R. tracks, and lowest bid is said to have been submitted by Baltimore Bridge Co., at \$2,750 for wrecking the bridge and \$15,000 for the steel work. Other bidders; Fitzpatrick & Koontz, \$17,989; Lauer & Harper Co., \$20,810; Pennsylvania Bridge Co., \$18,840; Pennsylvania Steel Co., \$19,484; the McIntosh-Marshall Construction Co., \$17,575. The city will build the foundations and do the other concrete work.

MISCELLANEOUS

Montgomery, Ala.—Question of underground wires in business section of city is being considered.

Fort Smith, Ark.—County Judge Harp has ordered Architect Jennings to prepare plans and specifications for repair of Court House and placing of it in condition which will not only prevent further damage, but will permit of additions being made to it.

Los Angeles, Cal.—Establishment of municipal lodging house is being discussed.

Pasadena, Cal.—Preliminaries for bond election for garbage incinerator and site for same, to cost in all \$40,000, have been put through City Council.

Pasadena, Cal.—Board of Public Works has determined to continue construction of garbage loading station near Mission rd. and Rinehard st., in spite of protests of people in South Pasadena and Pasadena.

Bridgeport, Conn.—Park Board has asked for \$48,368.26 for carrying on work of park improvements.

Fort Pierce, Fla.—Bids will be received until 8 p. m., Feb. 14, by City Council for purchase of \$80,000 Public Utility Bonds. F. M. Tyler, City Clerk.

Dublin, Ga.—At meeting of Dublin Chamber of Commerce it was decided by members to ask County Commissioners to postpone bond election indefinitely.

Macon, Ga.—City Council is considering purchase of automobile for Health Department and for City Plumbing Inspector.

Chicago, Ill.—Proposed bond issues which form large part of Chicago's \$70,929,214.93 budget for 1912 is subject of discussion. Bond issues proposed are for: New police stations and sites, \$2,156,750; new fire companies and stations, \$1,704,000; outer harbor construction, needed, \$5,000,000; new detention home and bath houses, \$370,000; municipal bathing beach at Wilson ave., \$250,000; total, \$9,480,750.

Connersville, Ind.—City is to have a new 30-acre park at east edge of city. Land has been given to municipality by E. V. Hawkins, president of Connersville Furniture Co., on condition that people raise \$3,000 for improvements.

Evansville, Ind.—Park Board is contemplating elaborate plans for improvement of Mesker Park and other parks in city.

Evansville, Ind.—Ordinance has been referred to Finance Committee asking for appropriation of \$5,000 for erection of public comfort station on Main st.

Salisbury, Md.—It is proposed to petition State Legislature for permission to issue bonds for reduction plant in southern suburbs.

Haverhill, Mass.—\$80,000 bond order has been introduced in Municipal Council to provide money for tuberculosis, contagious hospitals and heating plant.

Lowell, Mass.—Resolution has been passed for erection of public hall.

New Bedford, Mass.—Mr. Becker was lowest bidder at \$875.40 for Acme portable stone crusher and elevator. Other bids as follows: Climax make, Mr. Penson, \$1,167.38; Eureka make, I. M. Nelson, \$1,697.25; Eureka make, I. M. Nelson, \$1,560.25; Reliance make, S. B. Plummer, \$1,050. Bids were taken under consideration, no award being made. Bids for 10-ton Buffalo Pitts steam road roller have not been opened.

Grand Rapids, Mich.—Bids will be received by City Clerk until 3 p. m., Jan. 22, 1912, for purchase of \$250,000 flood protection bonds.

Waseca, Minn.—For iron work for new City Hall and jail, to Avery Steel & Iron Co., of Minneapolis.

Paris, Mo.—The \$100,000 bond issue authorized by voters for a new court house in Monroe County has been awarded to John Nickerson, Jr., of St. Louis.

Townsend, Mont.—Erection of new Court House to cost \$50,000 is being considered.

Olean, N. Y.—Mayor Foley recommended city hospital for contagious diseases, public market, new jail, municipal disposal plant and free water for poor people.

Saratoga Springs, N. Y.—Village Board of Health, of Saratoga Springs, has decided to ask for bid for construction of village hospital to replace one which was recently burned.

Schenectady, N. Y.—Resolution has been passed directing City Clerk to readvertise for bids for new county jail.

Akron, O.—City is considering garbage disposal plant.

Alliance, O.—Mayor recommends that City Council appropriate \$200,000 for city hall and hospital.

Cincinnati, O.—Bids will be received for furnishing and erecting 42 garbage incinerators and 1 large refuse and garbage destructor.

Cincinnati, O.—Ordinance has been introduced providing for issue of \$50,000 tubercular hospital bonds out of recent referendum issue.

Columbus, O.—Council has given second reading to resolution providing for special election May 21 on proposition of issuing \$250,000 to build new city prison.

Dayton, O.—Bids will be received until 12 noon, Jan. 17, by City Auditor for purchase of \$50,000 worth of bonds for improvement of Great Miami River.

Oklahoma City, Okla.—Committee of Oklahoma City Chamber of Commerce met to consider plan to have Oklahoma City vote bonds to amount of \$250,000 ostensibly for purpose of buying city park.

Eugene, Ore.—Election will be held in March for voting on site on which to erect new city hall.

Johnstown, Pa.—City Park Commission is considering providing additional playgrounds.

Norfolk, Va.—Board of Control has opened bids on erection of new city morgue. Award of contract has been deferred.

CONTRACTS AWARDED

El Centro, Cal.—By City Trustees to Contractor Young for leveling city park property on north side of city.

Norwich, Conn.—To Wm. Williams, of Providence, R. I., to erect Town Hall and Court House, at \$88,000.

Stamford, Conn.—To Whitney Stein Co., of New York, N. Y., at \$319,659, for new hospital plant on Hubbard's Hill.

Aurora, Ill.—To Dixon Eng. & Contr. Co., of Toledo, O., at \$9,316 for furnace and brick stack. City puts up the building for crematory.

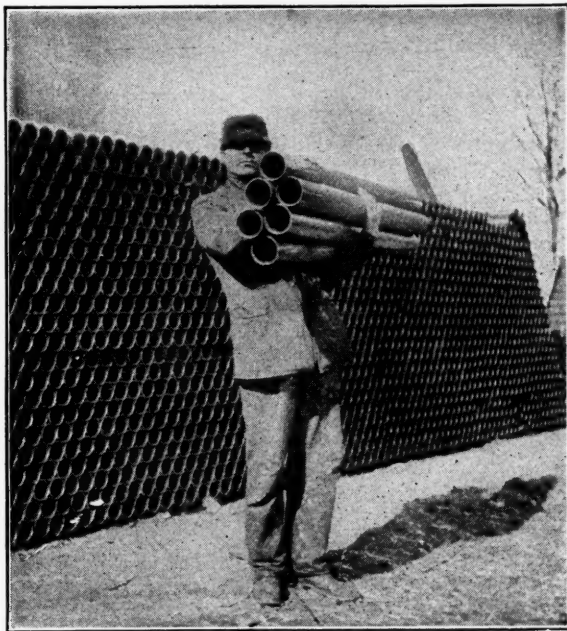
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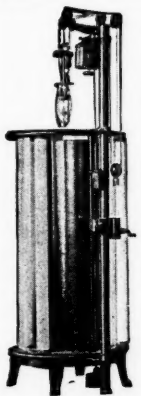
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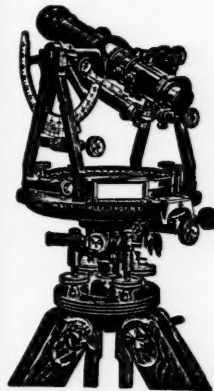


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| STREET IMPROVEMENTS | | | | |
| Missouri..... | New Madrid..... | Jan. 18, 2 p.m..... | Improving 10 miles of road..... | Road District Commissioners. |
| Texas..... | San Antonio..... | Jan. 20, 11 a.m..... | Re-surfacing and grading a number of roads..... | I. V. Huntress, County Auditor. |
| Ohio..... | Akron..... | Jan. 29, 11 a.m..... | Making fill at bridge approach..... | C. L. Wirth, County Clerk. |
| Louisiana..... | Shreveport..... | April 1..... | Furn. 60,000 tons hard rock or gravel..... | J. T. Bullen, Parish Engineer. |
| WATER SUPPLY | | | | |
| New York..... | New York..... | Jan. 17, 2 p.m..... | Furn. chlorinating plant; also c. i. pipe, special castings and valve boxes..... | H. S. Thompson, Commissioner. |
| BRIDGES | | | | |
| Minnesota..... | Duluth..... | Feb. 5..... | Constr. bridge over Pike River..... | County Commissioners. |

STREET IMPROVEMENTS

Oakland, Cal.—Ordinances have been passed for improvements to various streets.

San Jose, Cal.—Bids for furnishing rock crusher have been referred to Finance Committee, as follows: Austin-Western Co., \$4,885; A. L. Young Mch. Co., three styles of machine, \$4,997, \$1,650 and \$2,886.

San Jose, Cal.—Ransome-Crummey Co. was only bidder for improvement of intersection of Santa Clara and 12th sts., at following figures: Manholes, \$75 each; drain pipes, \$1 per lin. ft.; paving, 27 cents per sq. ft.

Atlanta, Ga.—There is movement on foot to widen Roswell rd. between Buckhead and Master's Bridge rd. That part of Roswell rd. is now only 50 ft. wide, and it is proposed to widen it to 70 ft.

Augusta, Ga.—Considerable street work is planned. There will be bitulithic paving put down on May ave. and Walton Way, from Clark's Mill to Bon Air Hotel. This is more than a mile, and is one of the most used thoroughfares in city. Paving of 12th st. is also planned. It is estimated that street will cost about \$75,000.

Topeka, Kan.—More street paving is being planned to consist of about 71½ blocks, or more than seven miles of brick and asphalt streets.

Topeka, Kan.—Resolutions have been adopted for improving of Huntoon, 14th and 15th sts., Euclid ave., Arch st. and several alleys.

Baltimore, Md.—City will shortly advertise for bids on six contracts for street paving as follows: Contract No. 7 will consist of about 58,000 sq. yds. of sheet asphalt re-surfacing. Contract No. 8, 48,000 sq. yds. of sheet asphalt re-surfacing and sheet asphalt on 6-in. concrete base. Contract No. 9, 8,000 sq. yds. of vitrified brick paving on concrete base. Contract No. 10, 18,000 sq. yds. of vitrified brick paving. Contract No. 11, 5,000 sq. yds. of granite block paving. Contract No. 12, 6,500 sq. yds. of granite block paving. Contract No. 13, 8,500 sq. yds. of granite block paving. Plans and specifications will require deposit of \$500. H. Kent McCay, Chief Engineer.

Boston, Mass.—Mayor Fitzgerald wants to have incoming Legislature pass bill authorizing city of Boston to borrow \$5,000,000 outside debt limit in order that he may carry out all most important street improvements discussed for years.

Boston, Mass.—Street Commissioners have estimated that Avery st. can be widened under new constitutional amendment to 40 ft. for about one million dollars.

New Bedford, Mass.—City Council has approved of following: Orders for layout of contemplated Sterling st., from Acushnet ave. westerly; contemplated Bristol st., from Acushnet ave. easterly; contemplated Hudson st., from Brock ave. to West French ave.

Elizabeth, N. J.—Mayor recommends construction of more crosswalks, and opening of Locust pl. under Lehigh Railroad.

Elizabeth, N. J.—Mayor recommends that borough purchase sprinkling wagon suitable for oil and water.

Long Branch, N. J.—Clerk has been directed to advertise for bids for first mile of ocean highway at Waterwitch Park, near Highlands. This is to be constructed of gravel, and estimated cost of mile of new road is \$20,000. Clerk was also directed to advertise for bids for Allentown-Yardville rd., to be built of stone, and little more than one mile in length.

Navesink, N. J.—Bids will shortly be advertised for extension of Mill st. down

to Latham Creek, and across to meet Locust Point rd.

Syracuse, N. Y.—Larger use of road machines on unpaved streets is recommended by Commissioner of Public Works. It is also recommended that ordinances be presented for resurfacing of asphalt pavements on which city has repaired 37½ per cent. of surface.

CONTRACTS AWARDED

Lexington, Ky.—By City for construction of concrete sidewalks on Maxwell st., from Rose st. to Broadway, to L. Des Cognets & Co., at 15½ cents per sq. ft.

Lexington, Ky.—By City for improvement of Third st., from east side of Jefferson st. to Henry st., with asphalt paving, to Carey-Reed Co., at following prices: Sheet asphalt paving (Trinidad Pitch Lake Asphalt), \$1.40 per sq. yd. Concrete, \$5.50 per cu. yd. Resetting manhole tops to grade, \$2.50 each. Cement paving in gutters, if any, \$1.25 per sq. yd. Extra binder, \$5.50 per cu. yd. Brick paving in car tracks, \$1.80 per sq. yd. Concrete in car tracks, \$5.50 per cu. yd. Limestone headers, 50 cents per lin. ft.

Seattle, Wash.—By City for paving Dearborn st., to T. Ryon, at \$46,682.25.

SEWERAGE

New Bedford, Mass.—City Council has approved of following: Orders for sewers in Capitol st., from Clarks Cove to Brock ave., and in Apponeganett st., from Brock ave. to Fern st., at estimated cost of \$8,000; in Collette st., from point west of to point east of North Front st., at estimated cost of \$400; sewer in Bolton and Jenkins sts., from 160 ft. north of Jenkins st. to point 570 ft. west of Bolton st., at estimated cost of \$2,000; and surface water drain in Bowditch st., from Belleville rd. to Glennon st., at estimated cost of \$400.

Elizabeth, N. J.—Comptroller Sauer has announced that \$15,000 of intercepting sewer bonds of \$25,000 issue recently authorized by City Council have been awarded to estate of William Luster at par and interest.

South River, N. J.—Construction of sewage disposal plant is being discussed. Engineer Potts, of Bound Brook, claims he can build adequate disposal system for borough and that cost, including plans, etc., will not exceed \$8,000. Melee & Bruno bid to build original disposal plant for \$12,500, and expert engineers have declared that system cannot be installed for less than \$30,000, and furthermore such system is not needed to meet requirements of borough.

Trenton, N. J.—Mayor Donnelly has offered resolution at Commissioners' session providing for sewage disposal plant. It was unanimously adopted and Commissioner Fell will have general direction over work, which will be done by Terry & Teuch, of New York. Plant is to be located at Municipal Hospital. It will cost \$1,750, and ozonation system will be used to purify the sewage.

Trenton, N. J.—Ordinance has been passed to authorize construction of sewer No. 545, in West State st., from Parkline ave. to Eastfield ave., thence in Eastfield ave. to Riverside ave., there to connect with sewer No. 224; also in West State st., from Westfield ave. to Eastfield ave., there to connect with sewer above described.

CONTRACTS AWARDED

Lexington, Ky.—By City for construction of sanitary sewer on Short st., from Walnut to Dewees, to Central Construction Co., at following prices: For 8-in.

pipe, 58 cents per ft.; for 5-in. pipe, 35 cents per ft.; for 5-in. Y branches or tees on 8-in. pipe, 50 cents each; for 5-in. ½ bends, 25 cents each; for manholes, \$30 each; for flushtanks, \$60 each; rock excavation, \$4 per cu. yd.

Seattle, Wash.—For sewers and water-mains on Dearborn st., to P. J. McHugh, at \$36,088.10.

WATER SUPPLY

San Francisco, Cal.—Plans are being considered for solution of water supply problem.

York, Neb.—Petition is being circulated to call election to vote bonds in sum of \$125,000 for purpose of building and equipping water and electric light plant in city of York.

Spotswood, N. J.—Installation of water system is being considered.

Cleveland, O.—Bond issue of \$1,500,000 for water purification will probably be put before voters on same day as issue of \$1,500,000 bonds for new city hospital is voted upon.

Portland, Ore.—Mayor Rushlight has directed Superintendent Dodge, of Water Department, to proceed immediately with extension of Bull Run mains through Woodstock district, in accordance with plans approved by Water Board.

Erie, Pa.—Bids for erecting new stand-pipe to be situated near reservoir south of West 26th st. will be opened in a few days at regular meeting of Board of Water Commissioners.

CONTRACTS AWARDED

Perth Amboy, N. J.—To Standard Cost Iron Pipe & Foundry Co., of Bristol, Pa., for 246 tons of 24-in. bell and spigot pipe, also ¼ long radius bends and two 24-in. gate valves, by Board of Water Commissioners, at \$19.55 per ton.

Youngstown, O.—By Board of Control: To Darlington Co., of Williamsport, 150 gate valves; to Garman & Leader Co., of Newark, O., 1,000 meters at \$6 each for house size; to Penna. Salt Manufacturing Co., alum at \$85.50 per ton; to R. D. Wood & Co., of Philadelphia, 80 fire hydrants at \$23.40 each; to Stambaugh-Thompson company, 30 tons of lead at \$4.55 a ton; to Morgan Manufacturing Co., of Buffalo, 150 valve boxes; to Farnum Bros. Brass Works, 1,200 curb boxes at \$2.35 apiece; to W. S. Dennison Co. for hauling 700 tons of pipe \$1.40 a ton. Bids on 750 tons of water piping were rejected. They will be re-advertised.

LIGHTING AND POWER

San Jose, Cal.—Clerk has been instructed to advertise for bids for lighting about 90 electroliers on Market st. for term of 4 years.

Longmont, Col.—New power plant erected in the mountains above Lyons by Longmont Service Co., and transmission lines from power house to Longmont have been purchased by city for \$41,500. Local distributing system already is property of Longmont.

Newburyport, Mass.—Careful consideration of question of purchase and operation by city of plant and equipment of Newburyport Gas & Electric Co. has been urged by Mayor Robert E. Burke.

Columbia, S. C.—It has been decided by Council to extend "the great white way."

CONTRACT AWARDED

Phoenix, Ariz.—By City Council for lighting city for one year at least with ornamental and arc lights to Pacific Gas & Electric Co., at 5 cents per kilowatt per hour.

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FIRE EQUIPMENT

Atlanta, Ga.—Fire Department will ask for four new automobile apparatus. Fire Chief will urge establishment of four new companies, one in Eighth Ward; one in Tenth Ward; one in Seventh Ward, and one in Fifth Ward. Cost of these, with auto apparatus will be about \$17,000 each.

Malden, Mass.—Mayor recommends that new central fire station be built in vicinity of Malden Square.

Elizabeth, N. J.—Mayor recommends installation of combination chemical fire extinguisher and hose wagon.

Plainfield, N. J.—Fire Chief asks for additional steamer of motor type.

Niagara Falls, N. Y.—Within next two weeks Board of Fire Commissioners will pass upon plans and specifications for two new fire halls to be erected with proceeds of bond issue of \$42,500. One in Third st. and other in new factory district.

White Plains, N. Y.—Board of Trustees have awarded \$38,000 worth of fire bonds to Esterbrook & Co. Funds will enable Union Hook & Ladder Co. to have new fire house.

Massillon, O.—City Council has passed over Mayor's veto ordinance authorizing bond issue of \$8,000 for purpose of converting into automobile apparatus present horse-drawn combination chemical trucks in engine houses Nos. 1 and 2.

BRIDGES

Boston, Mass.—Engineers of Public Works Department have been instructed by Commissioner Rourke to make study in connection with building of new Meridian St. Bridge to provide against possibility of grade crossings at Conder and Meridian sts.

Duluth, Minn.—Bids will be received until early February for construction of bridge over Pike River on Tower and Itasca rd.

Monessen, Pa.—Erection of free county bridge between Monessen and Donora is being discussed; estimated cost from \$200,000 to \$300,000.

Norfolk, Va.—Legislature will be asked to authorize the issuance of \$450,000 bonds for construction of Berkley Bridge.

CONTRACTS AWARDED

Jacksonville, Fla.—By City for building bridge over McGirts Creek at 104th st., to S. A. Turknett, at \$3,900, and to Converse Co. for building steel draw, at \$5,266.45.

Long Branch, N. J.—By Board of Freeholders to Owen J. Melee, of Long Branch, to rebuild Edgemere Bridge, near Deal Golf Club grounds. Bridge is to be constructed of wood, and will be 320 ft. long and 24 ft. wide. Mr. Melee's bid was about half that of next lowest bidder. His bid was \$2,130. B. A. Van Brunt, of Sea Bright, bid \$4,250, and the F. W. Schwiers Co., of New York, bid \$4,649.

MISCELLANEOUS

San Jose, Cal.—City Clerk has been directed to advertise for bids for purchase of municipal bonds in sum of \$377,000 to be opened first Monday in February.

Fueblo, Col.—All bids for new auto police-patrol have been rejected by City Commissioners, owing to fact that only one of bids complied with advertisement, which specified car of no less than 45 horse-power, A. L. A. M. rating. Advertisements will be inserted again and all dealers will be given opportunity to present new bids on cars of greater horse-power and more sturdy construction.

Augusta, Ga.—City will spend about \$600,000 on improvements of permanent nature, of which about \$250,000 will be for city hospitals.

Elizabeth, N. J.—Mayor recommends adoption of system for disposal of garbage and ashes.

Elizabeth, N. J.—Mayor recommends erection of municipal building.

Le Roy, N. Y.—Aldermen are discussing question of bringing again before taxpayers proposition to raise money to erect new town and village building to replace one destroyed by fire about eight months ago. Taxpayers will be asked to vote upon proposition in spring. At last special election held four months ago, proposition was defeated by fair majority.

Pittsburgh, Pa.—Establishment of municipal research library and equipment and maintenance of downtown branch are being discussed.

PROPOSALS

STREET PAVING

NEW BRITAIN, Conn.

Sealed proposals will be received by the Board of Public Works at their office until 5 p. m., Feb. 6, 1912, for the paving of Arch St., from the terminus of the present pavement to Kensington St., approximating 8,450 sq. yds. of pavement.

A certified check for \$2,000, made payable to the Treasurer of the City of New Britain, must accompany every bid as an evidence of good faith. Any bidder refusing to accept contract at his bid, if given to him, shall forfeit from said check an amount equal to the difference between his bid and that of the next highest bidder. Bids will be received for Vitrified Brick, Wooden Block, Asphalt, and Bitulithic and Granite Block grouted with cement.

Excavation on said work will approximate in contents the cubic yards as required for pavement, and the average haul is not to exceed 2,500 ft., the material to be placed as directed by the Engineer; the sum of \$0.01 per cu. yd. to be paid for each 100 feet of overhaul in excess of 2,500 ft. Sub-grade to be thoroughly compacted and rolled and shaped to conform with finished pavement.

Concrete foundation to be laid under all kinds of paving and to be five (5) in. in thickness, composed of one (1) part of Portland cement, three (3) parts Plainville sand, six (6) parts broken stone, no stone to be larger than 1½ in. on largest dimensions and all dust to be screened out.

The cushion coat for vitrified brick and wooden block to be 1 in. of sand evenly spread on concrete base.

All brick to conform to tests as provided by the National Association of Brick Manufacturers. Rattler test not to exceed 8 per cent. loss. Absorption test not to exceed 3 per cent.

Brick to be laid vertically on edges, close contact, in straight rows across street at right angles to curb, except at street intersection, where they shall be laid as directed by Engineer.

Expansion joint of 1 in. to be along each curb, same to be filled with ¾-in. paving pitch and ¼-in. sand.

Brick to be rammed and thoroughly rolled from sides to the center of street and the brick then grouted with filler composed of one (1) part Plainville sand and one (1) part Portland cement.

Wooden block to be 3½ in. in depth, variation not to exceed 1-16 in., and 3 in. in width, variation not to exceed ⅛ in. Block to be treated with a preservative oil, not less than 20 lbs. per cu. ft. to be inspected, oil to be coal tar product, free from adulteration. Specific gravity to be greater than that of water. Not more than 3 per cent. of the oil shall be insoluble by hot continuous extraction with benzol and chloroform. All tests to be made at the direction of the Engineer; blocks to be inspected and tested in accordance with his orders. Blocks to be made from long leaf yellow pine.

Expansion joints shall be laid along the curb and traverse joints ½-in. in width, every 50 ft. along the street, these joints to be filled with paving pitch.

The asphalt pavement shall consist of 1½-in. binder course and 1½-in. asphalt top, same to be laid on concrete foundation.

The bitulithic wearing surface shall be at least 2 in. in thickness.

The granite block shall be 5 in. in depth, with variation of ¼ in. or less, dressed so that they can be laid with ½-in. joint for distance of 1 in. down from head; joints not to exceed ½ in. at top, not to be more than 1 in. in any part of joint. Block to be from 8 in. to 12 in. in lengths, and 3½ in. to 4½ in. in width. The head of the block shall be so dressed that it shall not have more than ⅜ in. depression from a straight-edge laid in any direction across the block and held parallel to the general surface of

the block. Cushion coat for granite block to be 2 in. sand.

Any and all paving, including foundation, to be laid subject to inspection and approval of the City.

All bids to be put in a sealed envelope marked "Permanent Pavement Proposal—Arch St." The Board of Public Works reserves the right to reject any and all bids, or to accept any bid.

JOHN E. MOORE,

President, Board of Public Works.

STREET PAVING

BOISE CITY, Ida.

Sealed bids will be received by the Board of Public Works of Boise City, Idaho, for paving with Asphalt, Asphaltic Concrete Bitulithic, Westrumite Asphalt, Dolarway, Hassamite Plain Concrete, Concrete with Cement top, Granerite Hassam or Brick Pavement "With brick along street car tracks" in all streets and parts of streets in paving district No. Seventeen approximating three hundred twenty eight thousand square yards with necessary excavation, gutters and appurtenances as provided for by ordinance No. Nine Ninety-one. Said bids will be received up to two P. M., February 2, 1912, and immediately opened publicly by the Board of Public Works in the City Hall of said city, said pavement to be laid and constructed according to plans and specifications which may be seen at the office of the City Engineer. Each bid must be in accordance with the form of proposal furnished by the Board of Public Works and accompanied by a certified check on some local bank payable to Boise City for the sum of \$2,000 to be forfeited if the successful bidder fails to enter into a contract and furnish a good and sufficient bond in a sum equal to 25 per cent. of the total amount of his bid for the faithful performance of each and every covenant in the contract. The right is reserved to reject any and all bids or to let the work as a whole or in part or for one or more kinds of the above pavements as may appear to the best interest of the city. By order of the Board of Public Works of Boise City, Idaho, this third day of January, 1912.

KARL PAINE, President.

No. 2-3.

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A reputable man (or company) to hold salaried positions in company, to invest capital in same (absolutely secured) to handle local sales and manufacture on a royalty or co-operative basis, details upon request and satisfactory proof of your ability, reference and financial strength.

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